

**NATIONAL REGISTER TESTING OF NINE PREHISTORIC SITES
ON FORT HOOD, TEXAS: THE 2001-2002 SEASON**

by

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and

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with contributions by

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**NATIONAL REGISTER TESTING OF NINE PREHISTORIC SITES
ON FORT HOOD, TEXAS: THE 2001-2002 SEASON**

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Fort Hood

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ABSTRACT

Under contract with the United States Army, Prewitt and Associates, Inc., of Austin, Texas, conducted National Register eligibility testing of 13 subareas within 9 prehistoric sites during the 2001–2002 field season for the Directorate of Public Works, Environmental Management Office at Fort Hood. Excavations consisted of 37 backhoe trenches, 58 hand-dug test units (total volume of 58.125 m³), and 1 shovel test. Based on the testing results, 9 subareas are recommended as eligible for listing in the National Register, and 4 are recommended as not eligible.

Seven of the National Register-eligible subareas produced multiple stratified occupations, but 41CV1023-E and 41CV1182-C contain single, spatially discrete components. Relative and absolute dating indicates that cultural occupations at these nine sites range from the end of the Paleoindian period through the Toyah phase.

MANAGEMENT SUMMARY

Under contract with the United States Army, Prewitt and Associates, Inc., of Austin, Texas, conducted National Register eligibility testing of 13 subareas within 9 prehistoric sites during the 2001–2002 field season for the Directorate of Public Works, Environmental Management Office at Fort Hood. Based on the testing results, the following recommendations are made for each site and subarea:

SUBAREAS ELIGIBLE FOR NATIONAL REGISTER LISTING:

41BL788-A	Open campsite-burned rock midden
41CV93-B	Open campsite
41CV760	Open campsite-burned rock midden
41CV769	Open campsite
41CV1023-E	Rockshelter
41CV1182-C	Open campsite
41CV1415	Paluxy site
41CV1554	Open campsite
41CV1557	Open campsite

SUBAREAS NOT ELIGIBLE FOR NATIONAL REGISTER LISTING:

41CV1023-C	Open campsite
41CV1182-A	Rockshelter
41CV1182-B	Lithic procurement area-open campsite
41CV1182-D	Rockshelter

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The 2001–2002 phase of work was conducted under the supervision of Dr. Cheryl Huckerby, director of the Cultural Resources Management Program (CRMP) at Fort Hood. Other CRMP staff lending support included Karl Kleinbach, Kristen Wenzel, and Gavin Smith. Additional Fort Hood personnel have made themselves available over the course of many years and helped every project run smoothly. Hats off to Lester Duncan and Larry Pohlman (Department of Public Works, Maintenance Division), Gil Eckrich and Laura Sanchez (The Nature Conservancy of Texas), and Larry Ximenez (G3 Range Control).

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As usual, Phil Dering (Archeobotany Laboratory, Texas A&M University) and Brian Shaffer provided their expertise with the macrobotanical and faunal analyses. Jack Rehm photographed the artifacts. Huckerby, Kleinbach, and Wenzel reviewed the draft report (December 2002), as did Ed Baker for the Texas Historical Commission. Their input is appreciated.

Gemma Mehalchick

Project Archeologist

INTRODUCTION

1

Gemma Mehalchick

Since the late 1970s, intensive archeological investigations have been conducted at the Fort Hood military reservation (Figure 1-1), a 339.6-mi² (217,337 acres) area of Bell and Coryell Counties, Texas. This report documents the 2001–2002 formal testing phase completed as part of Fort Hood’s Cultural Resources Management Program. Geoarcheological investigations were conducted at nine prehistoric sites.

Following regulations (36 CFR 800) of the National Historic Preservation Act [16 U.S.C. 470(f) and 470h–2(f)] of 1966 (as amended), Fort Hood has engaged in a program to inventory and evaluate its cultural resources to determine the eligibility of historic properties for listing in the National Register of Historic Places (National Register). Between 1977 and 1991, archeological surveys covering approximately 95 percent of the post documented more than 2,200 prehistoric and historic archeological sites. In 1990, Fort Hood—representing the United States Army—entered into its first programmatic agreement with the Texas State Historic Preservation Officer and the Advisory Council for Historic Preservation. In accordance with this agreement, personnel from Fort Hood’s Cultural Resources Management Program (CRM) developed a 5-year Historic Preservation Plan for fiscal years 1990–1994, followed by a Cultural Resources Management Plan for fiscal years 1995–1999. The Historic Preservation Plan (Jackson 1990) and the cultural resources plan (Jackson 1994a) established long-range goals for managing Fort Hood’s cultural resources. With the inventory of cultural resources essentially completed by 1990—except for portions of the Live Fire and Permanent Dudded areas—the Fort Hood CRM Program began the work of evaluating prehistoric archeological sites.

Mariah Associates, Inc., (now TRC Mariah) of Austin, Texas, initiated the testing program and began evaluating prehistoric archeological sites in 1991. Their work included preliminary evaluations of 571 prehistoric sites in an intensive resurvey and shovel testing program, followed by more intensive mechanical and hand testing of 113 sites.

In 1995 Prewitt and Associates, Inc., (PAI), was contracted to conduct archeological work at Fort Hood and continued to test and evaluate prehistoric archeological sites in accordance with the Cultural Resources Management Program. PAI tested 116 prehistoric sites between 1995 and 2000, and these investigations are reported in the following eight research report volumes in Fort Hood’s Archeological Resource Management Series:

1995 Season	RR 37	Mehalchick et al. 1999
1996 Season	RR 38	Kleinbach et al. 1999
1997 Season	RR 39	Mehalchick, Kleinbach, et al. 2000
1998 Season	RR 40	Arnn et al. 2000
1999 Season	RR 44	Mehalchick, Killian, Caran, et al. 2000
	RR 46	Mehalchick, Killian, et al. 2003
2000–2001 Season	RR 47	Mehalchick, Kibler, et al. 2003
	RR 48	Mehalchick et al. 2002

To date, PAI has completed reconnaissance survey and shovel testing at 75 prehistoric sites (reported in Mehalchick, Kleinbach, et al. 2000 and Mehalchick, Killian, Caran, et al. 2000) and a small survey (1,729 acres) in the Live Fire Area (Killian and Blake 2001). In October 2000, Fort Hood issued one delivery order for PAI to

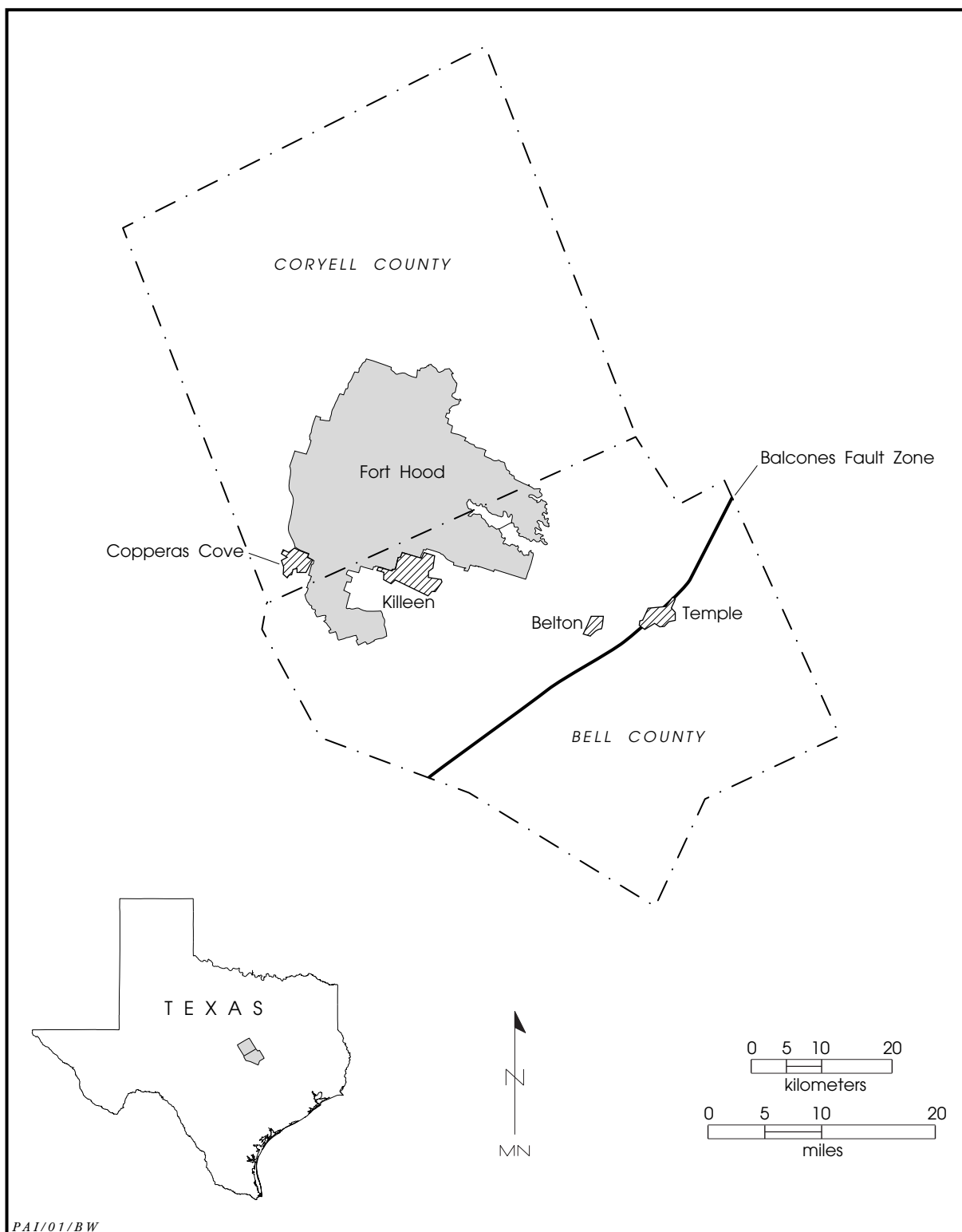


Figure 1-1. Location of Fort Hood.

conduct National Register testing at nine prehistoric sites. Field investigations at these sites were delayed for a year and were done from October 2001 to February 2002. This report details the results of those investigations.

This report is organized into seven chapters and four appendixes. Chapter 2 presents general environmental and archeological background data for Fort Hood and central Texas. Chapter 3 summarizes the field investigations and describes the field, laboratory, and analytical methods used for National Register eligibility testing. Chapter 4 describes the results of the National Register testing at each of the nine sites. In addition to providing information on site setting and previous archeological work, each site summary discusses the level of testing, artifacts recovered, features encountered, chronological assessment and geomorphic context of the cultural deposits, and interpretation of the data. When appropriate, horizontally or vertically discrete cultural zones that are reasonably well

dated are identified as separate analytical units. Cultural materials recovered from the nine sites are described in Chapter 5. Chapter 6 interprets the archeological data by comparing and contrasting geomorphic and cultural observations of National Register-eligible sites to groups of previously tested sites located in similar settings (e.g., rockshelters). Chapter 7 presents National Register eligibility recommendations for each site, along with recommendations for data recovery efforts.

The appendixes provide a range of technical data. Appendix A summarizes the 10 radiocarbon dates obtained during testing and provides corrected radiocarbon ages and $\delta^{13}\text{C}$ values. Geological descriptions of selected soil stratigraphic profiles in backhoe trenches and test units are detailed in Appendix B. Appendix C presents the analysis of vertebrate faunal remains by Dr. Brian S. Shaffer, and Appendix D covers the analysis of macrobotanical remains by Dr. Phil Dering (Texas A&M University).

ENVIRONMENTAL AND ARCHEOLOGICAL BACKGROUND

2

Karl W. Kibler and Gemma Mehalchick

Fort Hood is situated in the Lampasas Cut Plain, a subprovince of the Grand Prairie (Hayward et al. 1996), and is crossed by the northeastern edge of the Edwards Plateau (Hill 1901). The area represents a transitional zone from the more humid east to the semiarid west, and the environmental gradient is steep enough that distinct changes in landscape and vegetation are observable from east to west across the base. Geologically, Fort Hood is situated west of the Balcones Fault Zone on lower Cretaceous carbonate rocks. There is no distinct escarpment along the fault zone in the Fort Hood area, but notable differences do exist between the soils and vegetation developed on the upper Cretaceous (Gulfian Series) rocks east of the fault zone and those developed on the lower Cretaceous (Comanchean Series) rocks to the west (Abbott 1995a:5).

CLIMATE

The modern climate of the Fort Hood area is subtropical, characterized by hot, humid summers and relatively short, dry winters (Natural Fibers Information Center 1987:6). The prevailing wind blows from the south, reaching peak strength during the spring. Summer temperatures are high, with an overall average of 83°F (28.3°C) and an average daily maximum of 96°F (35.5°C) in Coryell County. The average temperature in winter is 49°F (9.4°C) but tends to vary considerably with the periodic passage of cold fronts, resulting in a pattern of alternating cold and mild days (McCaleb 1985:3).

Annual precipitation is approximately 32.5 inches (82.6 cm) for Coryell County (Natural Fibers Information Center 1987:121). Although rainfall occurs year-round, the overall

distribution pattern is bimodal, with peak rainfall occurring in the late spring and early fall.

FLORA AND FAUNA

The flora and fauna of Fort Hood are typical of the Balconian and Texan biotic provinces (Blair 1950). The biotic assemblage represents a mix of species from the Blackland Prairie to the east and the Edwards Plateau to the west. Many specific ecological niches also exist across the base, depending on the local topography, slope aspect, soil, and geology. Dense juniper and oak forest and scrub characterize the eastern side of the facility, but upland areas to the west and south are generally more open. Grasslands are most common on the intermediate upland surfaces, but juniper and oak scrub typically cover the high upland surface. Riparian zones are common along drainages and show a variety of hardwood species.

The Balconian faunal assemblage includes 57 species of mammals, but none are restricted solely to the Balconian province (Blair 1950:113). Eight of these species also inhabit the Texan province to the east and the interconnecting riparian zones (Blair 1950:101). Other native faunas include 36 species of snakes, 15 species of frogs and toads, and 16 species of lizards. Some prehistorically significant economic species once common to the area like bison were present in prehistoric times but are absent today.

GEOLOGY, GEOMORPHOLOGY, AND LATE QUATERNARY STRATIGRAPHY

The Fort Hood landscape consists of the dissected northeastern margin of the uplifted

Edwards Plateau and reflects the variable resistances of underlying geologic formations to erosion. Structurally, the area is underlain by a deeply buried extension of the Paleozoic Ouachita Mountains, which divide the stable continental interior to the west from the subsiding Gulf basin to the southeast. During the Cretaceous period, this region consisted of a very broad shelf covered by a shallow sea. Limestones and marls were deposited on the shelf as the shoreline fluctuated for more than 80 million years. Occasionally, relatively thin deposits of sand derived from terrestrial sources also accumulated on the shelf, resulting in interbedded formations like the Paluxy Formation and Trinity Sands. The Gulf basin subsided during the Miocene, causing the Balcones Fault Zone to develop along the old Ouachita line and lifting up the Edwards Plateau (Woodruff and Abbott 1986). West of the Balcones Fault, the Cretaceous limestones and marls remain relatively horizontal and structurally unmodified, but the Cretaceous rocks to the east dip sharply Gulfward and are deeply buried by Gulfian and later lithological units.

Because Fort Hood is west of the fault zone, relatively flat-lying lower Cretaceous rocks with a two-tiered topography locally termed the Lampasas Cut Plain (Hayward et al. 1990) underlie it. This landscape developed between the Brazos and Colorado Rivers and consists of large, mesa-like remnants of an early Tertiary planation surface surrounded by a broad, rolling pediplain formed during the late Tertiary and early Quaternary. These two surfaces differ by 25 to 40 m in elevation and form the “high” and “intermediate” uplands of the Lampasas Cut Plain (Hayward et al. 1990) and the “Manning” and “Killeen” surfaces Nordt (1992) identified. Modern stream valleys are incised approximately 40–70 m into the pediplain surface.

The oldest exposed rocks at Fort Hood belong to the Trinity Group, which includes the Glen Rose Formation. This formation is surficially exposed on the western side of Fort Hood, where relatively deep incision of the landscape by Cowhouse Creek and its tributaries has removed the overlying rocks (Proctor et al. 1970; Sellards et al. 1932).

Resting on the Trinity Group are rocks of the lower Cretaceous Fredericksburg Group. The lowest unit is the Paluxy Formation, a terrigenous siliclastic unit of strandplain, fluvial, and

deltaic deposits. The Walnut Clay, which is widely exposed at Fort Hood and forms the principal substrate of the Killeen surface, overlies the Paluxy Formation. Above the Walnut Clay rests the Comanche Peak Limestone, which forms the intermediate slopes of the higher Manning surface. The highest extensive lithological unit is the Edwards Group, including the Edwards Limestone that forms the resistant cap of the high upland mesas or Manning surface. Edwards Group formations also are an important source of high-quality chert (see Frederick and Ringstaff 1994; Frederick et al. 1994).

Nordt (1992, 1993, 1995), who identifies six principal alluvial units in the study area, has studied the stratigraphy and soil geomorphology of a number of larger Fort Hood streams in detail. From oldest to youngest, these units are termed the Reserve alluvium, Jackson alluvium, Georgetown alluvium, Fort Hood alluvium, West Range alluvium, and Ford alluvium (Nordt 1992). The Reserve alluvium is a fill of middle to late Pleistocene age that forms the T_3 terrace of the Leon River. The Jackson alluvium is approximately 15,000 years old and consists of 3–4 m of gravelly and loamy deposits resting on a bedrock strath. It forms the T_2 terraces of the Leon River and Cowhouse Creek and its larger tributaries. The Georgetown alluvium is the oldest unit within the deeply entrenched Holocene valley of Cowhouse Creek and its larger tributaries. It is always buried below the T_1 terrace surface. Deposition of this unit began no earlier than 11,300 B.P. and terminated by 8,200 B.P. (Nordt 1992). The 4- to 6-m-thick fill consists of gravelly and loamy deposits. The Royalty paleosol, formed on top of the Georgetown alluvium, typically consists of a truncated Bk horizon containing secondary precipitates of calcium carbonate. The Fort Hood alluvium is the major Holocene unit by volume along Cowhouse Creek and most of its tributaries. It consists of 9–10 m of gravelly and loamy deposits that date between about 8,000 and 4,800 B.P. The West Range alluvium accumulated in two episodes between 4,300 and 600 B.P., with a brief erosional period between 3,000 and 2,000 B.P. Typically 9 m thick, the West Range unit partially truncates and buries the Fort Hood alluvium in some areas. The Fort Hood and West Range alluviums aggraded to the same elevation in many of the valleys, making the T_1 surface diachronic.

Deposition of the Ford alluvium and construction of the modern floodplain (T_0) began 400–600 years ago and are continuing.

Like the alluvial deposits within the stream valleys, colluvial and slopewash sediments also comprise culturally relevant deposits within the base. These deposits occur both as relatively thick wedges of sediment at the base of steep slopes and as thin mantles on moderate to gentle slopes and level uplands. They commonly are interspersed with a number of alluvial fills at valley margins. Pedogenically altered late Pleistocene and Holocene colluvial and slopewash sediments derived from the Paluxy Formation are particularly significant deposits, encapsulating prehistoric cultural materials and features along the upper margins of many Pleistocene valleys at Fort Hood. Also archeologically significant are rockshelters and their accompanying sedimentary fills. Rockshelters and small overhangs are very common on Fort Hood, and the nature of their fills varies from shelter to shelter (Abbott 1995b:835).

CULTURAL CHRONOLOGY AND PALEOENVIRONMENTAL RECONSTRUCTION

The prehistoric cultural sequence for central Texas can be divided into three broad periods—Paleoindian, Archaic, and Late Prehistoric—although the terms Nearchaic (Prewitt 1981, 1985) and Post-Archaic (Johnson and Goode 1994) have been used at times in place of Late Prehistoric. Black (1989:25–32), Collins (1995), and Hines (1993) provide thorough overviews of these periods, with Hines focusing more on the chronological sequence of the prehistoric cultural resources in the area surrounding Camp Bullis, about 170 km south of Fort Hood. Prewitt (1981, 1985) defined a prehistoric cultural-historical framework incorporating discrete temporal and technological units. Johnson and Goode (1994) and Collins (1995) have presented revised cultural chronologies of the region and at the same time discontinued use of the term “phase” to describe each cultural-historical unit, opting instead for named intervals or patterns based on diagnostic projectile point styles and associated radiocarbon assays (e.g., Martindale-Uvalde interval) within each period or subperiod. These three cultural chronologies are compared in Figure 2-1. Figure 2-2

compares paleoenvironmental reconstructions of Johnson and Goode (1994) and Collins (1995) with paleoenvironmental models Nordt et al. (1994) and Toomey et al. (1993) propose for the central Texas region.

Although the chronologies of Prewitt (1981, 1985), Johnson and Goode (1994), and Collins (1995) all have merit, Collins’s chronology is used in this report because it based on a precise radiocarbon-dated projectile point sequence. The Austin and Toyah phase names are retained as designations for the two subperiods of the Late Prehistoric period, however. These phase designations correspond precisely with Scallorn-Edwards and Perdiz style intervals (Collins 1995), respectively, and are used in this report because they are well defined and widely accepted by most researchers.

PREVIOUS ARCHEOLOGICAL RESEARCH AT FORT HOOD

The history of archeological investigations at Fort Hood has been discussed many times and is not revisited here. The reader is referred to Jackson (1994b), Trierweiler (1994a, 1994b), and Trierweiler et al. (1995) for brief summaries of archeological investigations conducted in and near Fort Hood. Black (1989), Black et al. (1997), Collins (1995), and Ellis et al. (1994) provide the best background information for understanding the broader history of method and theory in central Texas archeology. Previous investigations of prehistoric sites in the Fort Hood area are summarized in Table 2-1.

PREHISTORIC RESEARCH CONTEXT AND NATIONAL REGISTER SIGNIFICANCE CRITERIA

Significance testing for the National Register of Historic Places (National Register), established by the National Historic Preservation Act of 1966, was not rigorous during early archeological investigations at Fort Hood. Through trial and error over the past 30 years, evaluating sites for National Register eligibility has become increasingly more formal, with a variety of research orientations, paradigms, and anthropological theories used at different times for measuring potential. In the early 1990s, Mariah Associates conducted an intensive study aimed at developing a prehistoric research

Nine Prehistoric Sites on Fort Hood: 2001–2002 Season

YEARS		CENTRAL TEXAS ARCHEOLOGICAL PERIODS & PHASES		CENTRAL TEXAS ARCHEOLOGICAL ERAS, PERIODS & PROJECTILE POINT STYLE PATTERNS		CENTRAL TEXAS ARCHEOLOGICAL PERIODS, SUBPERIODS & PROJECTILE POINT STYLE INTERVALS			
B.P.	A.D. B.C.	(Prewitt, 1985)		(Johnson & Goode 1994)		(Collins 1995)			
0		HISTORIC				HISTORIC			
		NEO - ARCHAIC	Toyah	POST - ARCHAIC ERA	Triangular Perdiz Scallorn Edwards	LATE PRE- HISTORIC	Perdiz		
	1000		Austin				Scallorn - Edwards		
		LATE ARCHAIC	Driftwood	II	Darl, Figueroa Ensor, Frio	LATE	Darl		
2000	0		Twin Sisters				Ensor - Frio - Fairland		
			Uvalde				Marcos - Montell - Castroville		
		MIDDLE ARCHAIC	San Marcos	LATE ARCHAIC PERIOD	Marcos	LATE	Marcos - Montell - Castroville		
	1000		Round Rock		Castroville		Lange - Marshall - Williams		
			Marshall Ford		Montell		Pedernales - Kinney		
4000	2000		Clear Fork		Marshall		Bulverde		
		EARLY ARCHAIC	Oakalla	MIDDLE ARCHAIC PERIOD	Nolan, Travis La Jita Unnamed Styles Early Triangular Merrell Calf Creek/Bell	MIDDLE	Nolan - Travis		
	3000		Jarrell		(Martindale, Uvalde)		Taylor		
6000	4000		San Geronimo	EARLY ARCHAIC PERIOD	Early Barbed Series Early Split - Stem Series (Hoxie)	EARLY	Bell - Andice - Calf Creek		
	5000		Circleville				Martindale - Uvalde		
		PALEO - INDIAN		PALEO- INDIAN ERA		PALEOINDIAN PERIOD	Angostura		
	7000							LATE	St. Mary's Hall Golondrina - Barber
									Wilson
10000	8000							EARLY	Plainview
	9000								Folsom
							Clovis		

Figure 2-1. Prehistoric cultural sequences of Prewitt (1985:Figure 5), Johnson and Goode (1994:Figure 2), and Collins (1995:Table 2).

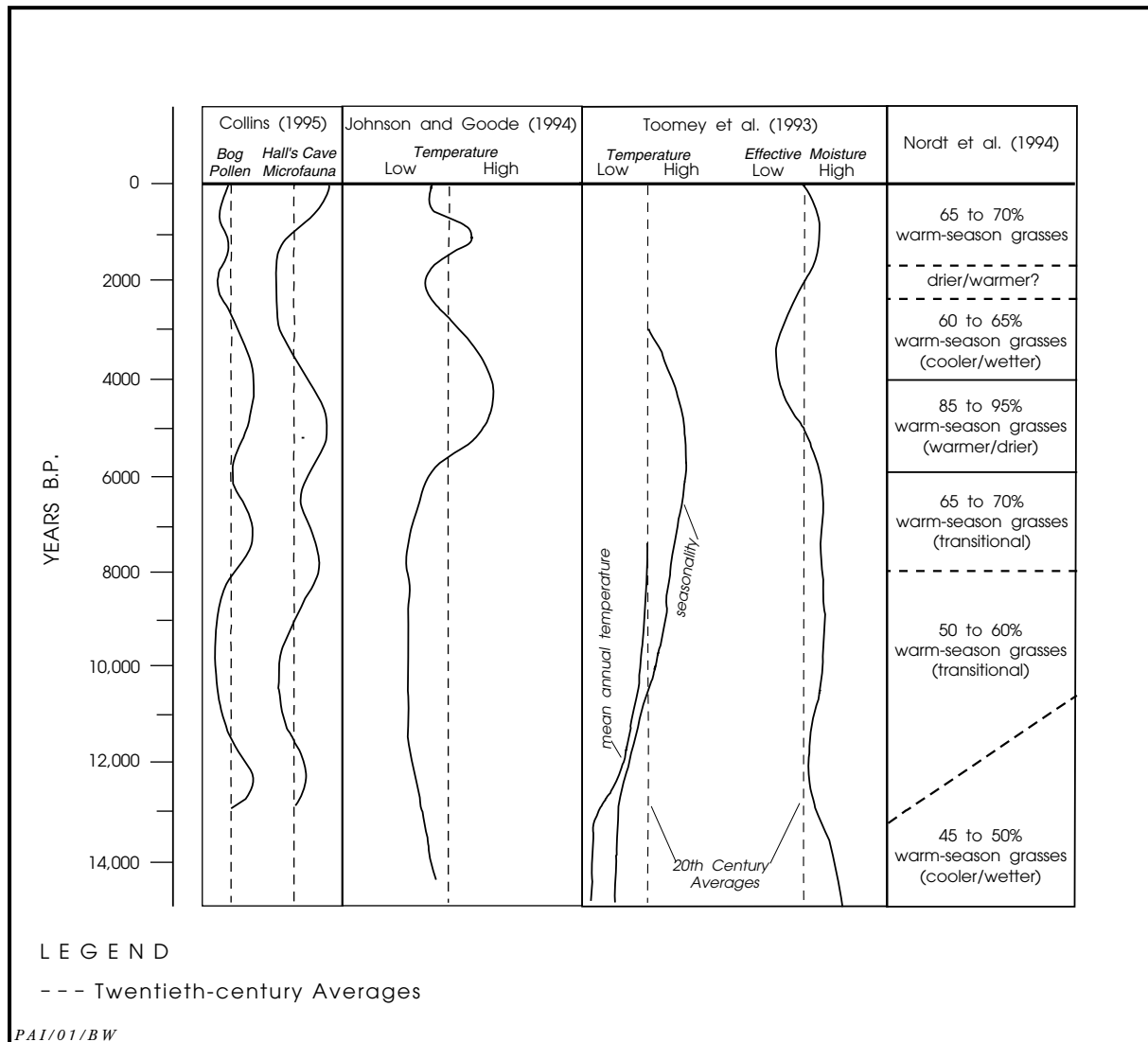


Figure 2-2. Late Pleistocene and Holocene paleoenvironmental records of Collins (1995:Table 2), Johnson and Goode (1994:Figure 2), Toomey et al. (1993:Figure 9), and Nordt et al. (1994:Figure 4).

design for Fort Hood. In the resulting document, Ellis et al. (1994) determined that the simplistic cultural-historical perspective that prevailed throughout the history of archeological research in central Texas was not providing satisfactory results. They created a new framework for evaluating National Register eligibility of Fort Hood prehistoric sites that is both rigorous from a theoretical perspective and practical in terms of implementation. This research design defines the ultimate goals of prehistoric archeological research at Fort Hood and establishes a set of National Register significance standards for judging the research potential of individual prehistoric sites.

The Fort Hood research design defines four fundamental research domains that “address the basic issues which underlie archeological analysis” (Ellis et al. 1994:100). It also identifies testable hypotheses that are categorized within a set of seven substantive research domains. These domains, ordered from simplest to most complex, raise questions that may be addressed using basic archeological knowledge and data sets established in the fundamental research domains. The ultimate goal is to begin modeling adaptive behavior based on the premise (or null hypothesis) that the prehistoric inhabitants of Fort Hood employed a foraging strategy. The fundamental and substantive research domains for

Table 2-1. Summary of previous prehistoric archeological research in and near Fort Hood

Year	Description of Research	Report	ARMS Number*
Early 1930s	Prehistoric site excavations in Bell County by A. T. Jackson (University of Texas at Austin)	unreported, see Young 1988	none
1933	Excavation of the Willison Farm rockshelter, 41BL3, by A. T. Jackson (University of Texas at Austin)	Jackson 1933; Wilson and Steele 1996	none
1930s	Ranney Creek Cave site excavation, Coryell County	unreported, see Prewitt 1974	none
1930s	Prehistoric site investigations by Frank H. Watt, including excavation of Aycock Rockshelter (or Kell Branch Shelter #1) in Bell County	Aynesworth 1936; Watt 1936; see also Lawrence and Redder 1985 and Stephenson 1985	none
1940s	Belton Reservoir preliminary survey by Robert Stephenson	see Shafer et al. 1964	none
1950s and 1960s	Belton Reservoir survey and excavations	Miller and Jelks 1952; Shafer et al. 1964	none
1960s	Stillhouse Hollow Reservoir survey and excavations	Johnson 1962; Sorrow et al. 1967	none
1960–1962	Youngsport site excavations, Bell County	Shafer 1963	none
1970s	Hog Creek Reservoir investigations by Southern Methodist University	Larson et al. 1975; Larson and Kirby 1976	none
1977	Hog Creek Reservoir investigations by the University of Tulsa	Henry et al. 1980	none
1960s and 1970s	Early surveys of Fort Hood by the Fort Hood Archeological Society	Thomas 1978	none
Late 1970s	Initial CRM surveys of Fort Hood by Science Applications	Skinner et al. 1981; Skinner et al. 1984	1, 2
1980s	CRM surveys of Fort Hood by the Texas Archeological Survey, The University of Texas at Austin	Dibble and Briuer 1989; Dibble et al. 1989; Roemer et al. 1989	3, 4, 10
1981	Historic research and remote sensing studies at Fort Hood, Fort Hood CRM program	Jackson and Briuer 1989	5, 6, 7
1980s–early 1990s	CRM surveys at Fort Hood by Texas A&M University	Carlson et al. 1986; Carlson et al. 1987; Carlson et al. 1988; Carlson et al. 1994; Ensor 1991; Koch et al. 1988; Koch and Mueller-Wille 1989a, 1989b; Mueller-Wille and Carlson 1990a, 1990b; Thoms 1993	11, 14, 15, 16, 17, 18, 20, 21, 23, 24, 27
1981–1983	Analysis of military training damage to archeological sites in West Fort Hood by Texas A&M University	Carlson and Briuer 1986	9
1985	Preliminary analysis of human skeletal remains from five vandalized rockshelters on Kell Branch, Bell County	Franciscus et al. 1985	None
1986	Developed standard operating procedures for field survey	Briuer and Thomas 1986	13
1991	Archeological site testing and evaluation (prehistoric and historic), Henson Mountain area, by Texas A&M University	Carlson 1993c	26

Table 2-1, continued

Year	Description of Research	Report	ARMS Number*
1990–1992	Site testing at Fort Hood, by Texas A&M University Field Schools	Carlson 1993a, 1993b, 1997	19, 22, 29
1989–1992	Geoarcheological studies of Fort Hood by Texas A&M University	Nordt 1992, 1993	25, 28
1993	Development of NRHP significance standards for prehistoric sites on Fort Hood by Mariah Associates	Ellis et al. 1994	30
1991–1993	Intensive shovel testing of 571 prehistoric sites by Mariah Associates	Trierweiler, ed. 1994	31
1993–1994	Edwards chert patination study by Mariah Associates	Frederick et al. 1994	32
1993–1994	NRHP prehistoric site testing by TRC Mariah Associates	Abbott and Trierweiler 1995a	34
1994	Archeological investigation of Native American medicine wheel by Mariah Associates	Quigg et al. 1996	33
1994–1995	NRHP prehistoric site testing by TRC Mariah Associates	Trierweiler, ed. 1996	35
1995	CRM survey of 164 acres adjacent to Fort Hood; land later acquired by Fort Hood	Largent 1995	none
1995	NRHP prehistoric site testing by Prewitt and Associates	Mehalchick et al. 1999	37
1996	NRHP prehistoric site testing by Prewitt and Associates	Kleinbach et al. 1999	38
1997	NRHP prehistoric site testing by Prewitt and Associates	Mehalchick, Kleinbach et al. 2000	39
1998	NRHP testing and reassessment of 41CV1423 by Prewitt and Associates	Arnn et al. 2000	40
1999	NRHP testing and reassessment of the Clear Creek Golf Course site, 41CV413, by Prewitt and Associates	Mehalchick, Killian, et al. 2002	46
1999	Archeological survey of 1,729 acres in the Clabber Creek and Jack Mountain ranges of the Live Fire Area, by Prewitt and Associates	Killian and Blake 2001	45
1999	Geoarcheological investigations and NRHP prehistoric site testing by Prewitt and Associates	Mehalchick, Killian, et al. 2003	44
1999	Limited data recovery at the Clear Creek Golf Course site, 41CV413, by TRC Mariah	Not yet reported	?
2000–2001	NRHP prehistoric site testing by Prewitt and Associates	Mehalchick, Kibler, et al. 2003	47
2000	Testing and reassessment of Paluxy sites and limited data recovery at the Firebreak site (41CV595)	Mehalchick, Kibler, et al. 2002	48

Note: Some of the early investigations relate to an area approximately 100 km in diameter centered around Fort Hood, but most relate specifically to archeological investigations on the military reservation. ARMS Research Report No. 8 was never published, and Research Reports 12, 36, 41, 43, and 49 relate only to historic sites.

* ARMS = Fort Hood Archeological Resource Management Series.

Fort Hood archeological research are summarized in Table 2-2.

Within the substantive research domains, Ellis et al. (1994) propose a series of 19 testable hypotheses and the types of archeological data needed to address them. Unfortunately, they are not practical for evaluating sites with the small amounts of archeological data derived from traditional limited testing. To bridge this gap, Ellis et al. (1994) created a simpler Significance Model for Fort Hood—a series of questions that define the types and quality of archeological data that a significant site must possess:

1. Does the site (or subarea) have the potential to contain intact and undisturbed assemblages of artifacts and features?
2. Does the site (or subarea) have the potential to contain chronological indicators?
3. Does the site (or subarea) have the potential for stratigraphically separated (i.e., buried) deposits in primary context?
4. Does the surface assemblage have evidence of primary lithic procurement or lithic reduction activities (pertains to sites with surficial evidence only)?

5. Do currently available technical procedures allow temporal separation of unstratified palimpsest assemblages (pertains to sites with surficial evidence only)?
6. Does the site meet any or all of the crucial data needs to test cultural hypotheses? Presence or absence of such data is determined by the following:
 - ◊ Does the site contain prehistoric bone or shell specimens that can be identified or dated?
 - ◊ Does the site contain prehistoric macrobotanical specimens that can be identified or dated?
 - ◊ Does the site contain features that may contain economic or chronometric samples or that may imply economic activities?
 - ◊ Does the site contain multiple and spatially separated features?
 - ◊ Does the site contain burned rock features, including middens or mounds?
 - ◊ Does the site contain unique, unusual, or nonlocal artifact types, artifact materials, concentrations of artifacts, feature types, or constellations of these?

The archeological research must address

Table 2-2. Summary of fundamental and substantive research domains for prehistoric archeological research at Fort Hood

Fundamental Research Domains	Chronological markers:	Subsistence bases:
	<ul style="list-style-type: none"> ▸ temporally diagnostic artifacts ▸ geomorphic dating 	<ul style="list-style-type: none"> ▸ flora ▸ fauna
Substantive Research Domains	Paleoenvironmental research:	Technological apparatus:
	<ul style="list-style-type: none"> ▸ paleoclimate ▸ paleotopography ▸ paleoecology ▸ paleoenvironmental synthesis 	<ul style="list-style-type: none"> ▸ tool production ▸ tool use ▸ consumables in the technological system
	<ol style="list-style-type: none"> 1. Site function I: identifying the apparatus of subsistence and nonsubsistence technologies 2. Site function II: spatial organization of individual technologies 3. Stability and change in technology and subsistence 4. Identifying adaptations I: temporally specific arrays of technologies and subsistence resource bases 5. Identifying adaptations II: adaptive strategies 6. Fort Hood in regional context 7. Explaining adaptation and adaptive change 	

each of these questions, in order, for each site investigated. Questions 1, 2, and 3 assess contextual integrity; question 6 assesses content integrity. Questions 4 and 5 pertain only to sites with surficial (or very shallowly buried) cultural evidence and need not be considered for sites with buried cultural deposits. For a site with buried deposits, the answers to questions 1, 2, 3, and 6 must all be yes to meet the requirements for National Register eligibility. If the answer to any is no, the site is considered to have a fatal flaw and is considered ineligible.

The model of site significance Ellis et al. (1994) proposed is useful for identifying sites that contain discrete, stratified layers of cultural occupation (or *gisements* as described by Collins [1995:374]). Archeologists must look

for sites with sufficient context (i.e., containing stratigraphically discrete evidence of cultural occupation or use) and content (i.e., intact features, assemblages of associated artifacts, and datable and interpretable organic remains) to allow for testing hypotheses relating to cultural behavior. These types of archeological sites are worthy of being eligible for listing in the National Register because they are likely to yield archeological data useful for addressing the prehistoric research problems identified for Fort Hood (Ellis et al. 1994:103–171). Such sites are considered eligible under Criterion D because they “have yielded, or are likely to yield, information important in prehistory or history” (National Park Service 1995:2).

WORK ACCOMPLISHED AND METHODS OF INVESTIGATION

3

Gemma Mehalchick

This chapter summarizes the work accomplished and methods employed at nine sites selected for National Register eligibility testing. The archeological research Prewitt and Associates, Inc. (PAI), conducted is consistent with the Fort Hood Cultural Resources Management Plan as Jackson (1994a) defined it and with previous prehistoric site investigations TRC Mariah Associates (Mariah) conducted. PAI adopted many of the same field and analytical methods Mariah developed in compliance with Fort Hood directives. Methods and procedures in four main areas—use of red flag criteria for evaluating National Register significance, limited level of site testing, lithic analysis and source identification, and quality control—were wholly adopted or only slightly modified.

PAI continued to use the research contexts and specific assessment criteria Ellis et al. (1994) devised for evaluating National Register significance (see Chapter 2). In terms of field implementation of the research design, PAI continued to employ the concept of red flag data sets, which, in turn, limits the volume of excavation at each tested site. Red flag sites are identified as “sites which have a high probability of requiring further management attention” (Trierweiler 1994a:11). The limited site testing in 1999 was designed to determine whether sites contained certain types of data that would make them eligible for listing in the National Register. Testing was terminated at each site once there was sufficient evidence to indicate red flag data sets were present. This limited level of testing does not generate large samples of material culture and features, nor does it adequately address the problem of establishing site boundaries for extensive open sites. Although this level of investigation is less intensive than typically employed

for National Register testing in Texas, it follows Fort Hood’s Cultural Resources Management Plan philosophy of minimizing the costs of evaluating large numbers of sites.

Lithic analysis and identification of material sources was the third area in which the current investigations strove for long-term consistency. Previous researchers had recognized relationships between the geographic distribution of many distinctive varieties of Edwards cherts and their occurrence in prehistoric sites. Mariah developed a chert typology based on extensive field investigations and laboratory research using lithic samples collected from chert outcrops during the archeological survey of the base and during Mariah’s resurvey of lithic resource procurement sites (Abbott and Trierweiler 1995b; Frederick and Ringstaff 1994:125–181). Fort Hood is the largest chert-rich area in central Texas where lithic sources have been examined thoroughly, so Mariah’s work provides a substantial foundation for beginning to address research questions about prehistoric use of lithic materials. PAI continues to use the established chert typology as a baseline from which to begin its lithic material investigations.

Quality control for archeological field and laboratory investigations is the fourth area in which continuity with previous research was maintained. PAI’s quality control program follows the same basic procedures Mariah used, with minor modifications. The quality control program resulted in a rigorous internal review of consistency of archeological methods and data.

The rest of this chapter describes the wide range of archeological methods and procedures PAI used during the 2001–2002 season of the Fort Hood prehistoric site testing program.

**NATIONAL REGISTER
SIGNIFICANCE CRITERIA:
RED FLAG DATA SETS**

National Register eligibility was evaluated according to the Fort Hood research design and the red flag site concept Ellis et al. (1994) developed. To implement National Register significance criteria in the field, Mariah modified the red flag concept to include four red flag data sets. The presence of any one of these data sets establishes a site as having a high research potential and as being eligible for listing in the National Register. Abbott and Trierweiler (1995a:37) define the four red flag data sets as:

1. macroscopically visible organic remains (charcoal, bone, seeds, shell) in a primary, thin bedded, and stratigraphically discrete context;
2. multiple and stratigraphically discrete cultural occupations with high chronometric potential, as evidenced by abundant charcoal or hearths with fired substrates or in situ burned rocks;
3. human bone found in undisturbed stratigraphic contexts; and,
4. buried Paleoindian or early Archaic components in primary and nondisturbed contexts.

Red flag data sets 1 and 2 pertain directly to the issues of site content and context, as Ellis et al. (1994) defined in the model of site significance for Fort Hood and as summarized in Chapter 2. Data set 3 recognizes the research potential of human remains in an intact archaeological context. As originally used by Mariah, data set 4 was implemented because the research design identified the Paleoindian and early Archaic periods as underrepresented.

Because the system of red flag data sets was used, the overall level of testing at each prehistoric site was limited. The criteria of one or more of the three primary red flag data sets (excluding human remains) were often satisfied by only a few test units. This was particularly true for open sites in alluvial settings where, even on inspection of backhoe trenches, it was obvious that test units would produce evidence of organic remains and cultural materials in primary contexts associated with one or more stratigraphically discrete cultural zones.

Each site was reviewed before test excavations were conducted, taking into account recommendations of the original investigators and the Fort Hood Cultural Resources Management Office. Because overall testing was limited by the specifications of the delivery order for National Register testing, various levels of testing at individual sites were determined by distributing the overall work (i.e., the number of trenches and total volume of hand-excavated units) according to the testing goals for each site. A great deal of flexibility was afforded to reallocate effort based on actual field findings. Excavations at the 9 investigated sites (13 subareas) consisted of 37 backhoe trenches, 58 test units, and 1 shovel test; 16 analysis units were defined (see Chapter 4).

As used in this report, analysis units equate to definable cultural components, and one or more may be identified at any site. An analysis unit was defined when an artifact assemblage or a group of features and artifacts was spatially discrete (horizontal or vertical separation) and sufficient chronological evidence (diagnostic artifacts, soil stratigraphy, radiocarbon dates, or any combination of these) allowed for a reasonable temporal assessment of the remains. Analysis units may represent very short occupations or broader periods of time. For all sites where the contextual and chronological data were too limited to identify meaningful components, all archeological remains are grouped as a single analysis unit.

FIELD METHODS

Field methods described in this section were used during formal National Register testing at nine sites. The methods used at 41CV1182 varied slightly from those used at the other eight and will be discussed in detail below. Formal testing consisted of a site reconnaissance, backhoe trenching, or manually excavated test units. With the site records and maps made by previous investigators in hand, the project archeologist conducted a reconnaissance to reevaluate each site. Goals were to become familiar with the site layout; re-locate surface or subsurface features, artifact concentrations, and previous shovel tests or test pits; assess the geomorphic interpretations and subarea designations previous researchers made based on landforms; and evaluate damage to the site.

Because no formal geoarcheological reconnaissance had been conducted at 41CV1182, this phase of work was undertaken before excavation. The project archeologist and crew re-surveyed the site, inspected the surface and subsurface exposures, and compared current conditions with those recorded when the site was first discovered in 1986. The site was divided into four subareas based on the presence of geomorphic surfaces with differing archeological potentials, and the existing site map was modified. Each subarea had the potential for isolable archeological deposits, and formal testing was conducted. The site also contained a historic component, previously designated as 41CV1264, that was thoroughly documented at this time.

To avoid disturbing endangered species habitats or other protected areas, mechanical excavations could not be undertaken until a representative from the Fort Hood Natural Resources Branch inspected each of the sites at Fort Hood. Site locations were checked on military installation maps and corresponding aerial photo sheets, and site sketch maps showing specific areas to be trenched were reviewed. Permission to proceed with unrestricted trenching was granted on all open campsites except three. No trenching was done at 41CV760 and 41CV1182 because they were located in an endangered bird habitat. Dense vegetation and steep topography also rendered both of these sites inaccessible for a backhoe. Trenching at 41CV1554 was limited to previously cleared areas because of endangered species habitat.

Trenching on open sites exposed sediments for interpreting depositional events, allowed for prospecting for buried cultural deposits, and provided access to deeply buried components. The Directorate of Environment and Housing, Maintenance Division, Pavement Section at Fort Hood provided a backhoe and an extremely proficient operator. The project archeologist always accompanied the backhoe operator to monitor trenching. Trench placement was based on the results of shovel testing, past and present observations (such as cultural materials noted in exposures), and the need for adequate horizontal coverage of the site area. Although mechanical and manual excavations were typically conducted within previously delineated site boundaries, in some cases these boundaries were restricted to a small portion of a landform extending hundreds of meters in one or more

directions. At times, these circumstances necessitated excavating trenches beyond a previously defined site perimeter, and in some cases, site boundaries were modified based on new subsurface finds. But in no case was mechanical testing done specifically to establish site limits, which was beyond the scope of the current investigations.

The project archeologist determined all backhoe trench and test unit locations and dimensions, at times consulting with the geomorphologist or the project manager. Trenches were numbered consecutively and marked with a wooden datum stake. The project archeologist plotted trench locations on the site sketch map and recorded standardized information about each trench on a backhoe trench data form. Trench orientation was recorded as the direction of the long axis compared to magnetic north. Trench dimensions were recorded in meters. The geomorphologist profiled selected trench walls and described strata on a geologic profile form. Where stratigraphic profiles were similar, only one or two profiles were recorded. Specific information about methods used to describe geologic profiles is found in Appendix B. Field personnel inspected trench profiles for cultural remains. As a general rule, trench fill was not screened, but diagnostic artifacts and some tools were collected from trench walls and backdirt. When appropriate, in situ samples such as charcoal were collected. Each sample was given a unique number consisting of the first letter of the sample type followed by a number (e.g., the first charcoal sample collected from a site was designated C1, the first flotation sample was designated F1, and so on). All similar types of samples were numbered consecutively and recorded on a sample inventory form.

Test units were excavated to sample buried cultural deposits and afford exposures for stratigraphic interpretation. Where test units were excavated beside a backhoe trench, the unit's orientation corresponded to that of the trench. Isolated units generally were oriented to magnetic north, but nonstandard alignments were used at times (e.g., units along the edges of cutbanks or looter's holes or adjoining the back wall of a rockshelter). Test units usually measured 1x1 m, but deviations from the standard size ranged from 0.5x0.5 to 1.5x1 m.

As with the backhoe trenches, test units were numbered sequentially. All units were

excavated in arbitrary 10-cm levels, with the ground surface at the highest corner of each unit used as the datum for elevation control. When test units were excavated on scraped areas adjoining backhoe trenches or in trench cuts or when overburden was intentionally removed, excavation levels were still numbered from the surface downward. For example, excavation of a test unit placed in a trench cut might begin with Level 10 from 90 to 100 cm.

Hand-excavated fill was dry-screened through 1/4-inch-mesh hardware cloth. Where present, samples of charcoal and a maximum of 15 land snail shells were collected from each general level context. All cultural materials were collected except for unmodified mussel shell fragments lacking hinges (presence noted), burned rocks (sorted by size, counted, and weighed), and intrusive historic and modern items (presence noted). Where the upper levels of a test unit were determined to be sediments of recent origin, clearly redeposited, or severely disturbed, these upper levels were removed as overburden without being screened. Subsurface deposits that obviously represented high-energy, gravelly channel fills were removed and not screened.

An excavation record form was completed for each level of each test unit, and an artifact frequency distribution summary form and inventory of field bags were filled out for every test unit. Selected profiles of test units, particularly those revealing features or cultural lenses in cross section, were drawn. If necessary for stratigraphic interpretation, the geomorphologist described geologic profiles of isolated test units.

Features were typically excavated and removed as discrete provenience units, and nonfeature matrix surrounding features was removed according to arbitrary levels and screened separately. Exceptions include burned rock midden and mound deposits, which were excavated in arbitrary 10-cm levels. A feature data form was completed for each feature, and plan and profile views were drawn. Whenever possible, separate charcoal samples were taken from the feature fill. All of the sediment from discrete features was collected for flotation, but larger and thicker features such as middens were sampled. In some cases, flotation samples were recovered from nonfeature contexts, particularly matrix around a feature. Sixty flota-

tion samples ranging in volume from 1.38 to 46.75 liters were collected, and the average was ca. 10.38 liters. If portions of a feature were sampled, the remaining matrix was screened through 1/4-inch-mesh hardware. The project archeologist noted test unit locations on the site sketch map and recorded excavation progress on daily journal forms. When necessary, a general data form was used for recording additional excavation information or daily notes.

Whenever possible, test units were excavated to bedrock, abundant gravels, deposits that were not culturally relevant in age, or combinations thereof. Where Holocene deposits were greater than 2–3 m, test excavations were terminated at an arbitrary depth at or below the maximum depth of cultural materials observed in trenches or other exposures.

Each site and its excavations were photographed and videotaped. Black-and-white print and color slide photographs were taken to document all phases of the investigations, including site and area overviews, backhoe trench and test unit profiles, cultural features, and other unusual archeological remains. Video recording of the work in progress and the completed site excavations provided further documentation.

All open sites were mapped using a Sokkia electronic total station, but mapping concentrated on subareas that were tested. Subareas not tested were partially mapped or completely excluded. A permanent site datum marked by a rebar (without any site tag or cap) in the ground was established at each site and assigned an arbitrary elevation of 100 m. Topographic data for each site relate to these datum points. Every site map includes the natural topography, cultural features visible on the surface, all mechanical and manual excavations, natural and manmade landmarks, and a site or subarea boundary based on the known or suspected spatial limits of surface or buried deposits. If warranted, the geomorphologist drew cross sections of open sites depicting various geomorphic surfaces and associated depositional units. A plan and profile of the rockshelters were either mapped with tape, compass, and line level or with the total station.

During test excavations, the project archeologist reviewed records and maps for consistency and quality. The project manager and the quality control officer periodically reviewed records.

The final field task consisted of backfilling all test excavations. The backhoe filled in each backhoe trench and all accessible test units on open sites. Archeologists manually backfilled test units on open sites that could not be reached by the backhoe and excavations placed in rockshelters.

Once fieldwork was completed, the project archeologist and geomorphologist wrote preliminary site reports for each of the 19 tested sites. The project manager reviewed and then submitted these reports, along with corresponding attachments and videotape, to the Fort Hood Cultural Resources Management Office.

LABORATORY METHODS

Before fieldwork began, the Fort Hood Cultural Resources Management Program methods and standards for laboratory processing and curation of collections were reviewed thoroughly. Artifact and material collections also were processed and curated according to federal curation guidelines, Council of Texas Archeologists standards, and current curation and conservation standards.

All collections were organized, processed, and curated by site. Collections from different sites were not intermingled at any stage of processing. As artifacts and samples were brought in from the field, they were organized by provenience and checked against the inventory of field bags and the sample inventory form for any problems or inconsistencies with the provenience information. If a problem was noted, it was corrected by referring to other excavation records or by consulting with the project archeologist. Collection bags were also checked for special information or instructions, and these materials were handled accordingly.

Once the field bags were checked, the materials were taken to the wet lab for cleaning. Some artifact categories such as bone, charcoal, and vegetal matter were dry-brushed rather than being cleaned with water. Other artifacts were cleaned using tap water and, occasionally, a soft toothbrush. After cleaning, artifacts were placed on a drying rack and allowed to air dry thoroughly before being cataloged.

After cleaning, the artifacts were bagged by material type within provenience designation. Each group of provenienced artifacts was assigned a unique provenience-specific accession

number. A specimen inventory, organized by site and in accession number order, was compiled with each artifact type listed under its assigned accession number. Recorded on the specimen inventory were the accession number, associated provenience data, the name of the excavator(s), the date of excavation, any other information recorded on the field bag, and the type and quantity of artifacts recovered. For some material categories such as charcoal, weight (usually in grams) was recorded rather than count.

All categories of artifacts were cataloged with site and accession numbers. Lithic tools were assigned unique specimen numbers within each accession number. When assigned, this number was added after the accession number on the artifact. A portion of each artifact received a base coat of Acryloid B-72 (a 10 percent solution of Acryloid B-72 in acetone). When dry, the site, accession, and specimen numbers were recorded using a rapidograph pen with archival black or white ink. This catalog number was then covered with a top coat of Acryloid B-72.

Each artifact type was placed into an appropriately sized 4-mil polyethylene bag. Archival curation tags documenting the name of the project, project number and date, site number, provenience data, accession number, artifact type, and the number of specimens (or weight) were placed into 1.5-mil polyethylene bags and placed within each artifact bag. Artifacts were grouped by artifact types or subtypes if appropriate. For example, projectile points were bagged by type name rather than as one unit.

Flotation samples were processed using the Flote-Tech flotation system, which provides a bimodal method of separating materials in a sediment sample. The process yielded a light fraction that was used for special analyses (such as macrobotanical) and a heavy fraction that was checked for artifacts larger than 1/4 inch. Roots and unmodified rocks were removed and discarded. Any artifacts found in flotation samples were processed following the procedures outlined above.

The photographic materials were also organized by site. Black-and-white photographs and negatives were checked against the photo logs to ensure that frame numbers and captions correlated and that the recorded information was accurate. The contact sheets were labeled on the back with project, site, and photo numbers. A 3x5-inch print was made from each negative,

these prints also were labeled with project, site, and photo numbers, as well as a caption. Color slides were checked against the photo log to ensure that the frame numbers and captions correlated and that the recorded information was accurate. Each slide was labeled with project name and number, site number, slide number, and caption. All of the photographic materials were placed into the appropriate archival holders. Videotapes of site investigations were labeled with project name and number, site number, and appropriate provenience information.

All forms and records used in the field, the lab, and during analysis were printed on archival paper and filled out in pencil. The exception was maps drawn on nonarchival grid paper, which were later treated in the lab with a deacidification solution. All field, lab, and analysis records were organized by project and then by site. Records were grouped by categories such as daily journal notes, testing forms, feature forms, specimen inventories, and so on. All photographs were curated as a unit, however, with all of the black-and-white photographs together and all of the color slides together. All written and photographic materials were placed in archival folders, archival record boxes, and archival curation boxes. An inventory detailing contents is included with each curation box. Curated photographic records also contain a computer-generated copy of the photo log, a cross-referenced photo log organized by site, and a disk copy of the computerized photo logs.

ANALYTICAL METHODS

Analyses of material culture (see Chapter 5) varied considerably depending on the class of artifacts being analyzed, the number of specimens within each artifact class, and the specific goals of the analysis. The material culture classification employed at Fort Hood is outlined in Table 3-1. Artifacts were grouped first by type of material, then within each material group, artifacts were further classified into morphological and functional classes and subclasses. Systematic observations of selected attributes were defined for different classes of artifacts. Within each class, each specimen was analyzed individually, and its specific attribute data were recorded on a computer coding form and entered into the computer database. The detailed attributes recorded for stone artifacts, the most abundant

artifact type recovered, are summarized in Table 3-2. All lithic artifact types and terminology are consistent with those presented in Turner and Hester (1993). For smaller artifact classes, such as modified bones or shells, specimens are described individually and detailed attributes are recorded in the database. Artifact data were manipulated using ACCESS for OFFICE 97.

The rest of this section defines the various artifact classes and subclasses, the attributes recorded for stone artifacts, and the methods of manipulating the material culture data. Attributes recorded for all nonlithic artifacts are described in the appropriate sections of the material culture chapter (see Chapter 5).

Definitions of Artifact Classes

The artifact classification and attribute analysis systems are the same as those used by PAI for the 1996, 1997, 1999, and 2000–2001 prehistoric site testing (Kleinbach et al. 1999; Mehalchick, Kleinbach et al. 2000; Mehalchick, Killian, et al. 2003; Mehalchick, Kibler, et al. 2003). They also generally correspond with the artifact analyses TRC Mariah (Abbott and Trierweiler 1995a:56–68; Trierweiler 1996:54–63) conducted previously and with general morphological descriptions of chipped and ground stone artifacts by Turner and Hester (1993). In this analysis, no attempt was made to infer tool function based on detailed analyses of flaking technology and use wear. A simple morphological and functional classification was employed.

Chipped Stone Artifacts

Arrow and dart points are functional groupings that denote stone artifacts probably used to tip projectiles. They are generally characterized as bifacially (sometimes unifacially) flaked specimens with triangular to leaf-shaped blade sections, sharply pointed distal ends, and sharp lateral edges. The distinction between arrow and dart points is one of size, with arrow points generally having a narrower body and a neck (or stem) width (of less than 8 mm). When possible, arrow and dart points were further classified by named types defined in archeological literature. Chris Ringstaff assigned all projectile points to types. Preforms consist of unfinished arrow and dart points and include specimens at various stages of reduction. Some complete or nearly

Table 3-1. Classification of material culture

CHIPPED STONES	GROUND AND BATTERED STONES
<ul style="list-style-type: none"> ▸ Arrow points <ul style="list-style-type: none"> named types untyped untypeable (fragments) preforms ▸ Dart points <ul style="list-style-type: none"> named types untyped untypeable (fragments) preforms ▸ Unidentified Projectile Points ▸ Perforators ▸ Gouges <ul style="list-style-type: none"> unifacial bifacial ▸ Bifaces <ul style="list-style-type: none"> early/middle stage late stage/finished bifacial knives beveled knives miscellaneous ▸ Unifaces <ul style="list-style-type: none"> end scrapers side scrapers end-side scrapers other scrapers miscellaneous spokeshaves ▸ Cobble tools/choppers ▸ Gravers ▸ Burins ▸ Core tools ▸ Multifunctional tools ▸ Edge-modified flakes ▸ Cores ▸ Tested cobbles ▸ Unmodified debitage 	<ul style="list-style-type: none"> ▸ Manos ▸ Metates ▸ Mano-hammerstones ▸ Other ground stones ▸ Indeterminate fragments ▸ Pitted stones ▸ Hammerstones
	OTHER STONE ARTIFACTS
	CERAMICS
	MODIFIED BONES
	MODIFIED SHELLS
	BURNED ROCKS
	UNMODIFIED FAUNAL REMAINS
	<ul style="list-style-type: none"> ▸ Bones ▸ Shells
	MACROBOTANICAL REMAINS

complete specimens could not be assigned to a named type and are classified as untyped if they lacked distinguishing attributes. Untypeable fragments are points that are too incomplete to be typed.

Perforators are characterized as having relatively long and tapered projecting bits with diamond-shaped biconvex or planoconvex transverse cross sections. They generally exhibit use-related microflaking on both faces of each edge or on alternate faces of opposite edges; polish and rounding are often evident on the lateral edges as well. Perforators may be made from flakes, unifaces, or bifaces. They may be projectile points reworked into perforators. As a func-

tional group, perforators are thought to have been used primarily for drilling or poking holes through various materials. No distinction was made in analysis between fine-tipped perforators, commonly called drills, and broad-tipped specimens, often called reamers.

Gouges are triangular or trapezoidal specimens with planoconvex transverse and longitudinal cross sections. They may be unifacially or bifacially flaked but have straight to concave, steeply beveled working edges. Use polish and microflaking are concentrated primarily on the tool's ventral face. Use-wear studies indicate that some gouges were probably hafted tools that functioned like modern-day planes or adzes. As

Table 3-2. Summary of attributes recorded for stone artifacts

Attributes Recorded	Arrow and Dart Points	Unmodified Debitage	Chipped Stone Tools	Ground Stone Tools
Site no., accession (lot) no., and provenience data*	x	x	x	x
Type name	x	—	—	—
Tool class or subclass	x	—	x	x
Raw material	x	x	x	x
Chert type	x	x	x	—
Completeness	x	x	x	x
Cortex**	—	x	x	—
Patination**	x	x	x	
Heating**	x	x	x	x
Size (by groups)	—	x	—	—
Maximum length (mm)	x	—	x	x
Maximum width (mm)	—	—	x	x
Maximum thickness (mm)	x	—	x	x
Blade length (mm)	x	—	—	—
Blade width (mm)	x	—	—	—
Haft length (mm)	x	—	—	—
Neck width (mm)	x	—	—	—
Base width (mm)	x	—	—	—
Comments***	x	x	x	x

* Provenience data recorded include backhoe trench or test unit number, excavation level, elevation or centimeters below surface (for piece-plotted specimens), feature association, flotation sample number, surface collection, and so on.

** Presence and absence or degree of this trait were noted.

*** Comments field was used for additional observations.

used in this analysis, gouges also include specimens that conform to the Clear Fork varieties (unifacial and bifacial) as defined by Turner and Hester (1993:246–249) and tools that some lithic analysts classify as wedges.

Bifaces include all varieties of bifacially flaked tools that are not included in other classes. Bifaces are grouped into three subclasses as defined by Mariah (Abbott and Trierweiler 1995a:60–61; Trierweiler 1996:56–57): early- to middle-stage, late-stage to finished, and miscellaneous. The first two subclasses represent different stages of the biface reduction sequence Callahan (1979), Collins (1975), Sharrock (1966), and others recognized. Early- to middle-stage bifaces approximate Callahan’s Stages 2 and 3, Collins’s initial trimming into primary trimming, and Sharrock’s Stages 1 and 2. They have moderate to large amounts of cortex remaining, and the edges are irregular and show no clear central plane when viewed on end. Some specimens that have thick ridges or lumps where several inadequate flake removals terminated in step fractures represent manufacturing failures.

Late-stage to finished bifaces approximate Callahan’s Stages 4 and 5, Collins’s primary trimming into secondary trimming, and Sharrock’s Stages 3 and 4. They are characterized by few or no remnants of cortex, sinuous to straight edges centered on a longitudinal plane when viewed on end, and a well-defined outline shape. Finished bifaces generally have a clear ovate to triangular outline shape. Some late-stage and finished bifaces conform to specific types of tools such as the Friday, Guadalupe, or San Gabriel bifaces Turner and Hester (1993:253, 256–258, 273) described. Knives are identified by their morphology and imply function (e.g., sawing and cutting). Bifacial knives are finished bifaces that show use or haft wear; these specimens include corner-tang knives. Beveled knives are thin bifaces that were ovate when manufactured, but one or both ends are pointed because alternate blade edges were resharpened. The miscellaneous biface subclass is a catchall group that includes bifacially worked specimens too fragmentary or too irregular to be classified as early- to middle-stage or

late-stage to finished bifaces. Miscellaneous bifaces may include specimens that functioned as scrapers or knives, or in other capacities.

Unifacial specimens are classified into six subclasses: end scrapers, side scrapers, end-side scrapers, other scrapers, spokeshaves, and miscellaneous unifaces. Subclasses are distinguished by the morphology and location of unifacial retouch or use wear. End scrapers have significant retouch or use wear along their distal edges, side scrapers have one or more worked or worn lateral edges, and combination end-side scrapers have characteristics of both. These scrapers, particularly end scrapers, may show evidence of hafting in the form of scarring or polishing on ventral ridges or proximal lateral edges. Other scrapers are unifacially worked implements with two or more retouched working edges that do not conform to the standard morphology of the end, side, or end-side scraper subclasses (e.g., a round scraper with its entire circumference serving as a working edge). Miscellaneous uniface is the catchall for any unifacial tool that does not fit into another subclass and include specimens that are irregularly shaped or have minimal working and retouch.

Spokeshaves are small flake tools with a worked concave edge that may have functioned as a plane to shave wood off of round sticks or shafts. The notchlike indentation may have been produced bifacially or unifacially. Spokeshave notches produced on other bifacial or unifacial tools (e.g., on an end scraper) are classified as multifunctional tools.

Cobble tools and choppers are unifacially or bifacially flaked implements made on cobbles or pebbles. Cobble tools exhibit extensive step fracturing, edge rounding, and polish indicating heavy wear. Large cobble tools are often called choppers and were probably used as hammers for heavy battering and crushing.

Gravers and burins are flake tools with one or more carefully chipped beak-like protrusions. They probably represent specialized tools used for fine cutting and engraving. Unifacial and bifacial tools with graver tips are classified as multifunctional tools. Burins probably functioned much like gravers (i.e., for cutting and engraving) but were made by striking off a flake along a lateral edge of a flake or tool. This different technique leaves a very steep or right-angle edge where the flake was removed.

Core tools are cores (see below) that have

had one or more edges modified to function as a tool or exhibit subsequent use wear. They are likely cores that were picked up and used as scraping or battering tools. The main distinction between core and cobble tools is that core tools originally functioned as cores before being made into or used as tools, but cobble tools did not.

As the name implies, multifunctional tools are artifacts manufactured to perform two or more functionally distinct tasks. Multifunctional tools may include artifacts that fall into two or more of the other artifact classes. Multifunctional tools commonly consist of a formal tool, such as a biface or end scraper with minimal reworking to add an expedient working edge, such as a spokeshave or graver.

Edge-modified flakes are flakes with one or more edges that exhibit very minimal retouch and use wear. These expedient tools were used with little or no preparation. Edge-modified flakes include tools that some lithic analysts call utilized flakes or retouched flakes.

A core is a chipped stone that has had flakes removed, but its primary function was as a source of flakes. Cores show no evidence of use for any function other than flake removal. Tested cobbles are a specific type of core characterized by minimal flake removals, and they retain at least 90 percent of the cortex remaining. These pieces were presumably tested to inspect the quality of the raw material.

Unmodified debitage consists of waste flakes from tool manufacture that exhibit no evidence of having been further modified or used. For analytical purposes, unmodified flakes were classified as complete, proximal fragments, chips (medial or distal fragments), and chunks (angular fragments). Although the amount of cortex present on flakes was recorded (see below), no attempt was made to define flakes according to their inferred reduction stage (such as biface thinning flakes, notching flakes, or unifacial manufacture and resharpening flakes). Before attributes were coded, unmodified flakes also were sorted into the following size categories corresponding to standard-sized sieves:

Standard	Metric
<0.25 inch	<64 mm
0.25–0.5 inch	64–130 mm
0.5–1.0 inch	130–254 mm
1.5–2.0 inch	381–508 mm
72.0 inch	>508 mm

Ground and Battered Stone Artifacts

Ground and battered stone tools are classified into the following groups: manos, metates, mano-hammerstones, other ground stones, indeterminate fragments, pitted stones, and hammerstones. Manos are stones used for grinding and generally have one or two ground faces (i.e., unifacial or bifacial grinding). Metates are milling slabs on which manos were used; they encompass a range of different forms and sizes. Mano-hammerstones functioned primarily as manos but also show evidence of battering along one or more edges. Other ground stones can include a variety of tools such as anvils, abraders, pestles, and modified hematite. Indeterminate fragments are pieces of ground stone too fragmentary to identify their form or function. Pitted stones are pieces of limestone that exhibit one or more circular to ovate pits. Often called nutting stones, they were possibly used for cracking shells or may have served as anvils in bipolar flake reduction. Hammerstones have extensive battering on one or more edges, and most are water-worn cobbles. The precise function of hammerstones is not always clear, but most specimens are thought to represent percussion hammers used in knapping other stone tools.

Other Stone

Other stones are artifacts or possible artifacts that do not correspond to any of the previously defined artifact types. The other stone category has included hematite-stained rocks and possible pitted stones.

Modified Bones and Shells

Modified bones and shells are specimens intentionally cut, ground, or otherwise altered in manufacturing a tool or ornament. This category may also include specimens exhibiting use wear but without other modifications. Modified shells are most commonly fresh water mussel shells but occasionally include marine shells or terrestrial snail shells.

Bones or shells that were modified accidentally or incidentally by humans are classified as unmodified (see Unmodified Faunal Remains below). These may include specimens that were

broken, cut, or burned while being processed as food.

Unmodified Faunal Remains

Faunal remains include vertebrate and invertebrate remains and are classified as unmodified or modified. Depending on their archeological context and other factors, unmodified bones are considered to represent either discarded remains of animals that were killed by humans or remains that were deposited in sites as a result of natural processes. Unmodified bones are specimens that exhibit no evidence of intentional modification. These may include bones modified incidentally or accidentally (e.g., bones that exhibit spiral fractures or cut marks resulting from butchering an animal) by humans. The analysis of unmodified bones is presented in Appendix C.

Invertebrate faunal remains include freshwater mussel shells and land snail shells. Mussel shell valves and fragments associated with cultural deposits are believed to represent materials humans introduced and discarded. All unmodified mussel shell valves with an umbo (whole or partial hinge) were collected; other unmodified fragments were discarded in the field. Discolored and calcined shells indicate that shells were heated intentionally, perhaps to remove the mussels, or burned accidentally, possibly being discarded into fires.

Snail shells, primarily various species of *Rabdotus*, are ubiquitous in cultural deposits at Fort Hood but are believed to occur naturally in most contexts because organic-rich detritus in habitation sites likely attracted the snails. Consequently, the presence and abundance of snail shells was always noted in excavation records, but for contexts where snails are ubiquitous, only a small sample was collected from any given provenience for possible radiocarbon dating and amino acid racemization studies.

Burned Rocks

The burned rock category includes all non-chert rocks (primarily limestone) showing evidence of heating such as thermal discoloration, angular fractures, or spalling. All thermally altered rocks were examined and quantified in the field (i.e., sorted by size and weighed) and then discarded if no other modifications were ob-

served. The distributions of burned rocks within sites are discussed under each site module (see Chapter 4), but the data were not entered into the artifact database. Many burned rocks are directly associated with heating or cooking features, and even nonfeature burned rocks are considered to have been heated intentionally and were probably used as heat-retaining stones in a heating or cooking feature at one time.

Macrobotanical Remains

Macrobotanical remains were recovered as individual charred wood samples and from flotation samples of cultural sediments. The presence, absence, or abundance of macrobotanical remains is discussed for individual sites (see Chapter 4) but was not entered into the artifact database. Appendix D presents analysis of macrobotanical remains from selected sites.

Definitions of Stone Artifact Attributes

Aside from provenience data and classification attributes, other attributes recorded for stone artifacts consist of subjective observations and objective measurements of metric data (see Table 3-2). Subjective attributes include identifications of raw materials and chert types and assessments of artifact completeness, presence or absence of cortex and patination, and evidence of heating. Objective (i.e., metric) attributes consist of measurements (in millimeters) used to characterize individual specimens. When appropriate, comments about nonstandard attributes or observations for individual specimens were added to the database.

Raw Materials and Chert Types

Raw material types identified among the chipped, battered, and ground stone artifacts are chert, quartz, quartzite, limestone, sandstone, and hematite. Specimens identified as chert consist of opaque to partially translucent cryptocrystalline or microcrystalline materials. Fine-grained cherts lack visible crystalline structure, have weak to moderate luster, and are partially translucent. Coarse-grained cherts have visible crystalline structure, an opaque appearance, and a generally grainy fill. Quartz, a com-

mon mineral of crystalline silica, is a component of many types of rocks. It typically occurs in crystal form or cryptocrystalline masses, has a glassy luster, and is usually colorless to white and extremely hard. Quartzites are metamorphic rocks consisting mainly of recrystallized quartz. Fine-grained crystalline structures and a reddish-purple color characterize most recovered quartzite specimens. Various types of Cretaceous limestones (carbonate-rich, fine-grained sedimentary rocks) are found in cultural deposits at Fort Hood (see Burned Rocks). No attempt was made in the field or laboratory to sort types of limestones, but excavators noted the approximate frequencies of fossiliferous vs. nonfossiliferous limestones from many different features. Some varieties of sandstone—fine- to coarse-textured sand grains cemented by silica or carbonates—are found in the Cretaceous limestone in the Fort Hood area. Other types of sandstone appear to be nonlocal. Hematite nodules—iron oxide concretions in advanced stages of weathering—occur naturally in certain places (e.g., Paluxy sediments).

All chert specimens, regardless of artifact class, were compared with the established Fort Hood chert typology. Because central Texas is so important as a chert resource area for local and extra-regional use (Shafer 1993:55), much attention has been devoted to developing a typology of the chert resources on Fort Hood (Abbott and Trierweiler 1995b; Dickens 1993a, 1993b; Frederick and Ringstaff 1994). The Fort Hood chert typology previous researchers established was employed in this study and is summarized in Table 3-3.

Completeness

Each stone artifact is classified as complete, nearly complete, proximal fragment, medial fragment, distal fragment, edge fragment, indeterminate fragment, or barb. A nearly complete specimen is missing only a small portion (ca. 1 to 15 percent of the whole artifact), but the size and shape of the entire specimen can be determined easily. For incomplete specimens, no attempt was made to interpret the nature of the breakage (manufacture vs. use breaks).

Cortex

The amount of cortex on a chipped stone

Table 3-3. Fort Hood chert types

Type No.	Type Name	Abbreviation
1	Heiner Lake Blue-Light	HLB-LT
2	Cowhouse White	CW
3	Anderson Mountain Gray	AMG
4	Seven Mile Mountain Novaculite	SMN
5	Texas Novaculite	TN
6	Heiner Lake Tan	HLT
7	Fossiliferous Pale Brown	FPB
8	Fort Hood Yellow	FHY
9	Heiner Lake Translucent Brown	HLTB
10	Heiner Lake Blue	HLB
11	East Range Flat	ERF
13*	East Range Flecked	ER FLECKED
14	Fort Hood Gray	FHG
15	Gray-Brown-Green	GBG
16	Leona Park	LP
17	Owl Creek Black	OCB
18	Cowhouse Two Tone	CTT
19	Cowhouse Dark Gray	CDG
20	Cowhouse Shell Hash	CSH
21	Cowhouse Light Gray	CLG
22	Cowhouse Mottled with Flecks	CMF
23	Cowhouse Banded and Mottled	CBM
24	Cowhouse Fossiliferous Light Brown	CFLB
25	Cowhouse Brown Flecked	CBF
26	Cowhouse Streaked	CS
27	Cowhouse Novaculite	CN
28	Table Rock Flat	TRF
29	Indeterminate white	–
30	Indeterminate yellow	–
31	Indeterminate mottled	–
32	Indeterminate light gray	–
33	Indeterminate dark gray	–
34	Indeterminate light brown	–
35	Indeterminate dark brown	–
36	Indeterminate black	–
37	Indeterminate blue	–
38	Indeterminate red	–
39	Indeterminate nonlocal	–

Note: No Type 12 was assigned.

artifact provides evidence of the raw material source and can reveal much about the stage of manufacture. Cortex on each chipped stone artifact was categorized as 0 percent, 0–50 percent, 50–99 percent, or 100 percent. These groupings serve to minimize subjectivity and provide units suitable for analysis. No attempt was made to describe different types of cortex.

Patination

The degree of patination on chert artifacts

was noted as being none, light, or heavy. Patination is the complex weathering process by which cherts develop a colored rind around their exterior surfaces. For central Texas cherts, Frederick et al. (1994:6) use the term patina to refer to the weathering rind that is visible in petrographic thin sections and is “white or light gray to the unaided eye.” Patination is time-dependent and can be used in a gross fashion as an age indicator, although the absence of patination says nothing about an artifact’s age. There are too many variables involved in the chemical process of patination to derive meaningful chronological interpretations based on variations in the degree of patina (Frederick et al. 1994:37–38).

Heating

Stone artifacts with evidence of low-intensity heating such as slight discoloration, reddening, or a glossy surface texture may have been intentionally heat treated. When artifacts were intensively heated—as evidenced by heat spalling, fracturing, or crazing—it is likely that the heating was accidental. Unfortunately, distinguishing between intentional and accidental heating is very subjective.

For this analysis, degree of heating was recorded as none, low, or high for all stone artifacts, and chert specimens that display low- to moderate-intensity heating are thought to represent intentionally heat-treated pieces.

Metric Attributes

For most stone tools the only measurements taken were maximum length, width, and thickness. For projectile points the standard measurements taken were maximum length, blade

length, blade width, haft width, neck width, base width, and maximum thickness. All measure-

ments were taken in millimeters with digital calipers and read to one-tenth of a millimeter.

RESULTS OF NATIONAL REGISTER TESTING

4

Gemma Mehalchick and Karl W. Kibler

Open campsites, open campsites-burned rock middens, and rockshelters were formally tested during the 2001–2002 field season (Table 4-1). Two of the nine sites consist of multiple subareas. Sites 41CV93-B, 41CV760, 41CV769, and 41CV1554 are within the Owl Creek drainage basin, but the rest do not share geographic or environmental settings. Thirty-seven backhoe trenches, 58 test units (58.15 m³), and 1 shovel test were excavated at these sites, and 16 analysis units are identified. Results of National Register testing are presented by site in this chapter. In Chapter 6, these sites are compared with each other and other similar sites on Fort Hood.

41BL788

Site Setting

Site 41BL788 encompasses a portion of Seven Mile Mountain (an upland Manning surface) and its north-northeast facing slope that overlooks an unnamed tributary of Reese Creek. Generally, the slope is very steep but levels out toward its base in the eastern portion of the site. Three deeply incised drainages originating from the upland surface bisect the slope, and there is a burned rock midden on the west bank of the central channel. The site area is dominated by an oak-juniper woodland. Site elevation is 300–350 m above mean sea level.

Previous Work

Topographic maps of quadrant 09/36 dated 9 October 1981 depict the locations of prehistoric and historic artifacts, along with 41BL788 (maps on file, Cultural Resources Management Office, Fort Hood). As plotted, the site had

maximum dimensions of 650 m east-west by 200 m north-south. There was no other site information.

Mariah Associates visited and evaluated the site on 4 June 1993 (Trierweiler, ed. 1994:A505–A511). Based on the surficial extent of cultural materials, the site dimensions were enlarged slightly to 730x200 m (Figure 4-1). The site consisted of an open campsite situated on a gentle slope of the high upland (Manning) surface. The landforms were discontinuously mantled with a thin accumulation of colluvium and slopewash revealing O-A-C-R and A-C-R soil profiles. This drape rarely exceeded 10 cm, and much of the slope comprised nodular to fissile limestone. There was a low-density debitage scatter across this area, and bioturbation, sheet erosion, and light vehicle traffic were noted as disturbances.

Feature 1, a burned rock midden measuring ca. 20 m in diameter, was present on the west side of a drainage transecting the slope. Stone tools and debitage, a piece of ground sandstone, burned rocks, mussel shells, and small bone fragments were exposed by looters' holes and backdirt piles on and beside the midden. Deposits were at least 15 to 20 cm deep, and much of the feature appeared intact. Because Feature 1 had the potential to yield intact cultural deposits, shovel testing was warranted.

On 7 June 1993, a crew excavated three shovel tests to a maximum depth of 70 cm. Shovel Tests 1 and 2 were excavated on exposed sections of Feature 1. Both tests produced dense cultural materials, and the midden ranged from 20 to 60 cm thick. Diagnostic artifacts consisted of two dart points, a Pedernales and a Gary, along with two Scallorn arrow points. Shovel Test 3 was placed in an area where Feature 1 was not visible to help delineate the extent of the midden.

Table 4-1. Summary of work accomplished

Site	Site Type	Drainage	Geomorphic Setting	No. of Backhoe Trenches	No. of Test Units	No. of Shovel Tests	Volume of Test Units Excavated (m ³)	No. of Analysis Units Defined
ELIGIBLE								
41BL788-A	Open campsite-burned rock midden	Reese Creek tributary	slope	–	4	–	1.83	1
41CV93-B	Open campsite	Owl Creek	Killeen surface, T ₂ , T _{1a} , and T _{1b}	12	3	–	3.45	2
41CV760	Open campsite-burned rock midden	Owl Creek tributary	T ₁ and T ₀	–	4	–	2.48	2
41CV769	Open campsite	Owl Creek	T ₁	9	9	–	13.72	1
41CV1023-E	Rockshelter	Stampede Creek	bluff	n/a	1	–	0.55	1
41CV1182-C	Open campsite	Browns Creek tributary	T ₁ and T ₀	–	3	–	2.70	1
41CV1415	Paluxy site	Cowhouse Creek tributary	slope	6	11	–	12.88	1
41CV1554	Open campsite	Owl Creek	T ₁	6	8	–	9.69	2
41CV1557	Open campsite	House and Turkey Run Creeks	T _{1a} , and T _{1b}	4	6	–	3.76	1
Subtotal				37	49	–	51.06	12
NOT ELIGIBLE								
41CV1023-C	Open campsite	Stampede Creek	T ₁	–	5	–	5.33	1
41CV1182-A	Rockshelter	Browns Creek tributary	bluff	n/a	2	–	0.50	1
41CV1182-B	Lithic procurement-open campsite	Browns Creek tributary	Manning surface, bluff, slope, and T ₂	–	1	1	0.65	1
41CV1182-D	Rockshelter	Browns Creek tributary	bluff	n/a	1	–	0.60	1
Subtotal				–	9	1	7.08	4
Total				37	58	1	58.14	16

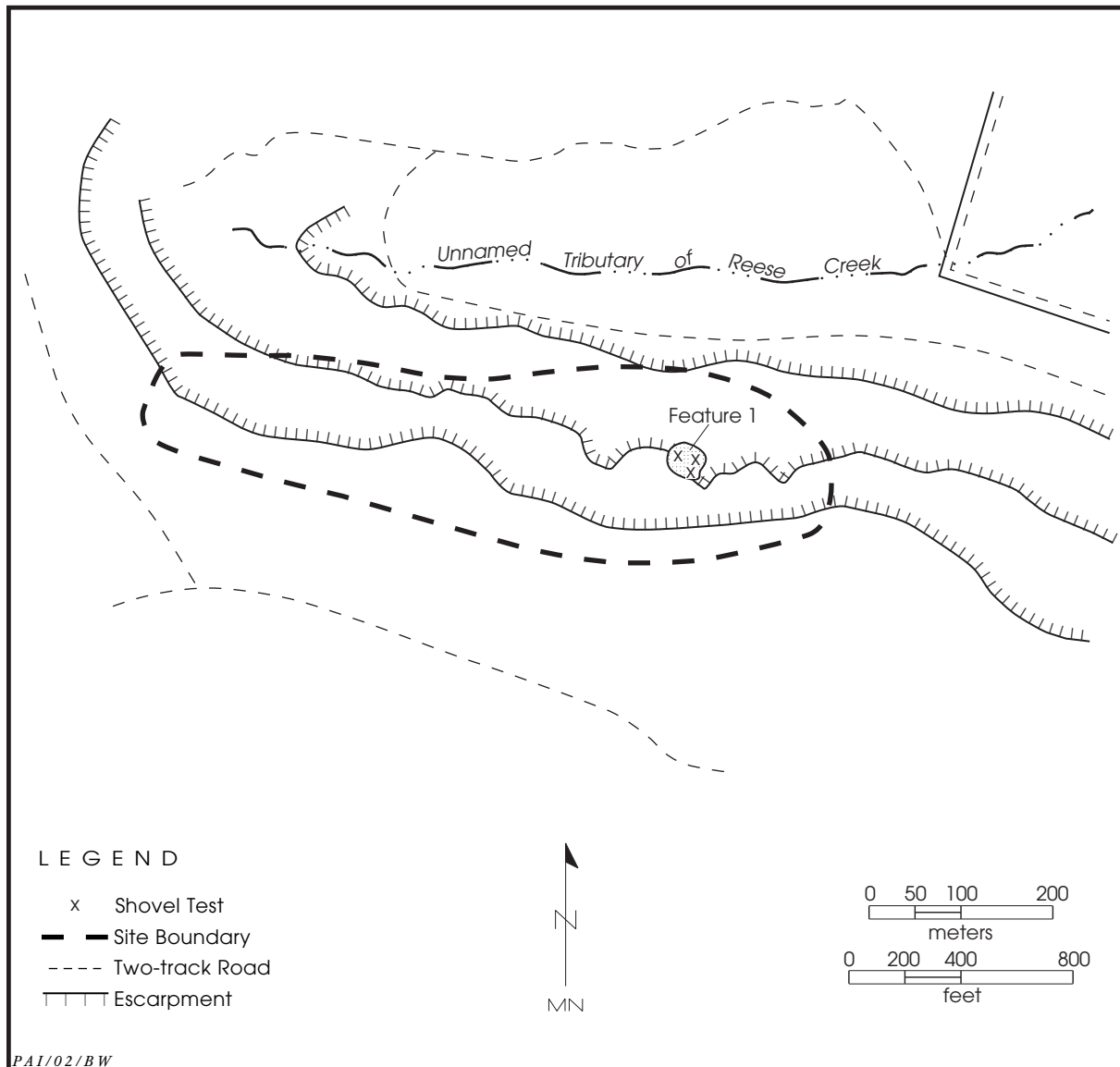


Figure 4-1. Site map of 41BL788 (modified from Trierweiler, ed. 1994: A506).

This test contained only one burned rock at 20–30 cm.

During analysis, Feature 1 and the immediate surrounding area were designated Subarea A, and the rest of the site subsumed Subarea B. The testing results indicated that only Feature 1, the burned rock midden, had archaeological research potential. Recommended testing to determine National Register eligibility consisted of a minimum of 1 to 2 m² of hand-excavated test units in Subarea A (Trierweiler, ed. 1994:A508).

Based on the site size, 41BL788 was classified as a lithic resource procurement area. On

23 July 1993, Mariah Associates assessed the potential utility of Subarea B to address questions of lithic resource procurement and reduction (Trierweiler, ed. 1994:A505–A511). Chert and impact zones were identified, mapped, and described, and chert samples were collected. Because portions of Subarea B contained chert resources and were not completely disturbed, these areas were surveyed at this time. The survey results indicated that specific parts of the subarea were potentially eligible for National Register listing because they could provide useful data for lithic procurement issues. Further consultation between Prewitt and

Associates, the Texas Historical Commission, and Fort Hood archeologists in 1995–1996 led to a consensus that lithic resource procurement areas on Fort Hood have a low research potential and are not eligible for listing in the National Register (Boyd et al. 2000:17–21).

Work Performed

Feature 1, the burned rock midden recorded in 1993, was re-located, and there was no apparent evidence of recent looting. On 10 December 2001, formal testing of 41BL788-A was completed (Figure 4-2). From four test units, 1.3 m³ was hand excavated (Table 4-2). The excavations were terminated between 40 and 60 cm when a gravelly B horizon was encountered. This gravelly stratum represents a thin veneer of colluvial slope wash.

Site Extent and Depth

The well-defined landform (slope) comprising Subarea A (including Feature 1) measures 32x17 m, covering an area of 544 m². Although previous investigators estimated that Feature 1 measured about 20 m in diameter, formal testing results and various exposures indicate the midden has maximum dimensions of 24 m northeast-southwest by 14 m northwest-southeast. Dense cultural materials associated with the midden occur between the surface and 40 cm.

Definition of Analysis Units

Although 41BL788-A encompasses midden (anthropogenically modified) and off-midden (nonanthropogenic) deposits, the sediments and cultural materials found in both locations correspond to the same general time periods. Consequently, the entire site is considered one analysis unit.

Excavation Results

Three of the four test units encountered Feature 1. Only Test Unit 3, situated the furthest downslope, lacked midden deposits (Table 4-3). In Test Units 1, 2, and 4, the 20- to 40-cm thick midden was confined to an anthropogenic A horizon, which was underlain by a gravelly Bw horizon (see Appendix B). All of the deposits rep-

resent late Holocene colluvium. The thickest portion of the midden was in Test Unit 2, where it yielded a dense and varied cultural assemblage encapsulated in a highly organic, “greasy” sediment. Charcoal collected from the midden at 40 cm was identified as indeterminate wood and yielded a conventional radiocarbon age of 1480 ± 40 B.P. (Beta-167176; see Appendix A). The highest artifact counts occurred at 10–20 cm in all of the units. In general, most burned rocks measured less than 15 cm in size and were either very blocky, angular pieces or thin tabular fragments. All of the burned rocks were composed of nonfossiliferous limestone available on the surrounding slopes. No internal features were apparent, and although 25 to 30 percent of the midden was looted, roots and insect bioturbation were the only disturbances noted in the excavations.

The excavations produced an abundance of formal and expedient tools, some cores and groundstones, and a dense amount of flakes. Although bifaces and edge-modified flakes dominate the chipped stone tools, they represent slightly less than half of the assemblage. Two modified faunal remains appear to have been used as tools. A canid- to deer-sized mammal bone fragment shows a very smooth and highly striated exterior. One end of the piece is cut and smooth and has man-made striations perpendicular to those on the outer portion of the bone. A lateral edge is also worn and smooth. One triangular mussel shell valve fragment has two cut edges, and its ventral margin is worn. Of 78 total bones, 48 (61.5 percent) are identified as canid- to deer-sized mammals, and 37 (47.4 percent), including deer-sized specimens and a rabbit or hare tibia, display spiral fractures (see Appendix C). Also, one vertebrate and two canid- to deer-sized long bone fragments show impact points associated with green bone breaks. The identifiable species of unmodified mussel shells consist of *Amblema plicata*, *Leptodea fragilis*, and *Quadrula apiculata*. Macroplant and flotation samples yielded boxelder, hawthorn, juniper, oak, sycamore, willow family, and indeterminate woods, along with an unidentifiable bulb fragment (see Appendix D).

Discussion

The test excavations reveal a spatially discrete burned rock midden covering approxi-

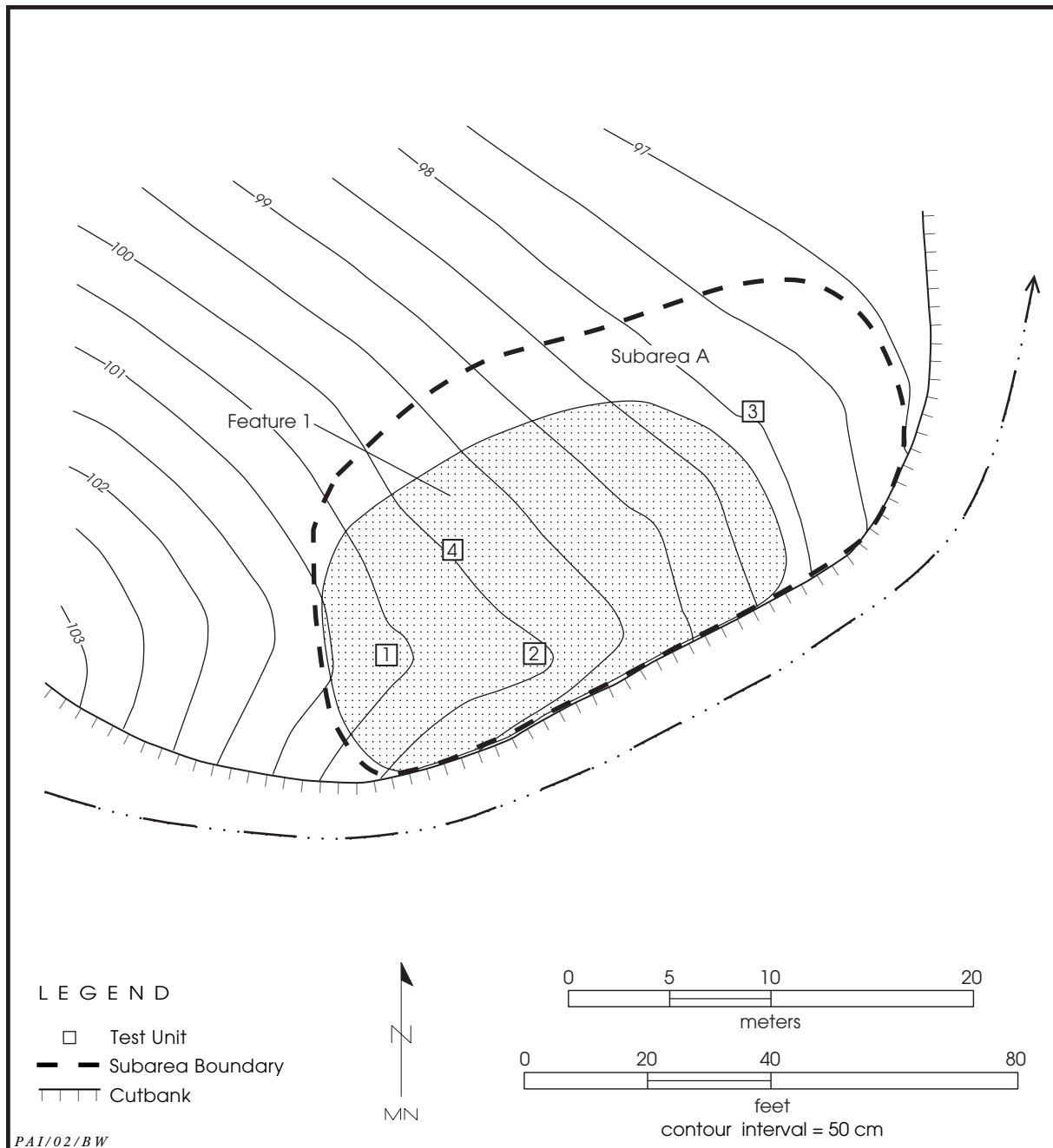


Figure 4-2. Map of 41BL788-A.

mately 336 m² that is shallowly buried on a gentle slope at the base of Seven Mile Mountain. A calibrated radiocarbon date (2-sigma range) of A.D. 530–650; temporally diagnostic Darl, Alba, and Scallorn points; and the depositional environment indicate that the midden accreted during the Late Archaic and Late Prehistoric (Austin phase) periods. The much older Martindale and Thrall points probably represent

collected and reused items. Sixteen named chert types make up 13.4 percent of the entire lithic assemblage, which may reflect a greater variation in the resources available on Seven Mile Mountain. The tool kit indicates a wide suite of activities, and the faunal remains reveal exploitation of terrestrial and aquatic resources. Impact points and a high frequency of spiral fractures on bones provide strong evidence of

Table 4-2. Test unit summary, 41BL788-A

Test Unit	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
1	1.0 x 1.0 m	surface	50 cm	0.50	Feature 1 at 10–40 cm
	0.5 x 0.5 m	50 cm	60 cm	0.03	–
2	1.0 x 1.0 m	surface	50 cm	0.50	Feature 1 at 0–40 cm
3	1.0 x 1.0 m	surface	40 cm	0.40	–
4	1.0 x 1.0 m	surface	40 cm	0.40	Feature 1 at 10–30 cm

intentional breaking for marrow extraction. The floral remains include edible bulbs and a variety of fuel woods from different areas of the midden. The occurrence of plant material from every flotation sample collected from the feature suggests substantial subsistence and environmental data may be preserved in the general midden matrix.

Even though looting has disturbed the feature, much of the midden remains intact and has considerable potential to contain isolable, internal features such as earth ovens. Off-midden activities are probably also preserved within the same, discrete landform. Based on the testing results, 41BL788-A is recommended as eligible for listing in the National Register.

41CV93

Site Setting

Situated on various terrace surfaces north of Owl Creek, this large site consists of a lithic resource procurement area and open campsite. Cold Springs Road bisects the entire length of the site, and two ephemeral, southeast-flowing tributaries drain into Owl Creek. Most of the area has been cleared and was probably used for agriculture historically. Scattered juniper, hackberry, and live oak trees occur primarily on the lower terraces. Site elevation is 300–350 m above mean sea level.

Previous Work

The Fort Hood Archeological Society first recorded the site on 22 March 1976 (site form on file, Cultural Resources Management Office, Fort Hood). This large occupation site measured 900x450 m and was located on a low terrace dissected by small arroyos. Dense to sparse scatters of flakes, bifaces, and cobbles were observed, and a biface and one side scraper were collected. Few disturbances were noted, but

military maneuvers heavily damaged the area.

On 11 June 1984, Texas A&M University re-recorded the site as a lithic procurement area situated on a large fluvial gravel field and series of low terraces overlooking Owl Creek (site form on file, Cultural Resources Management Office, Fort Hood). The site dimensions as depicted on the sketch map measured 700x375 m, although the site form stated they were 400x75 m. The area consisted of an extensive scatter of chert cobbles, debitage, hammerstones, bifaces, and cores, along with a dart point. Although limestone was present, no burned rocks were observed. A possible shell lens was noted, but no description or location was given. Cultivation, erosion, and tracked vehicles had disturbed an estimated 32 percent of the site (Carlson et al. 1986:272).

On 8 December 1992, Mariah Associates visited and evaluated the site (Trierweiler, ed. 1994:A689–A693). Because archeological potentials and geomorphic contexts differed, the site was divided into Subareas A and B (Figure 4-3). Based on the surficial extent of cultural materials, the site dimensions were modified to 850x250 m.

Subarea A subsumed a Pleistocene-age terrace lying approximately 12 m above the modern stream. This strath terrace was covered with thin, discontinuous alluvial deposits consisting of chert gravels mixed with thick, black clay soil derived primarily from weathering of the bed-rock strath located upslope and on the site. The soil exhibited an Ap-Ass-Bt-R profile containing abundant residual chert, with the Bt horizon slightly rubified. Burned rocks, bifaces, cores, scrapers, and flakes were scattered across the surface, and one Williams dart point was collected. Erosion, military activity, cattle, probable cultivation, roads, and historic activities such as a corral severely disturbed the area. Because Subarea A comprised a stable to erosional surface strongly affected by several factors, no further work was recommended.

Table 4-3. Summary of cultural materials from 41BL788-A

Provenience	Artifact Totals																							Burned Rock Counts	Burned rock Weights (kg)		
	Alba Arrow Points	Scallorn Arrow Points	Untypeable Arrow Points	Arrow Point Preform	Dart Point	Martindale Dart Point	Thrall Dart Point	Perforator	Bifaces	Bifacial Knife	Scrapers	Miscellaneous Unifaces	Spokeshave	Graver	Multifunctional Tool	Edge-modified Flakes	Cores	Debitage	Mano	Metate	Modified Bone	Modified Mussel Shell					
Test Unit 1																											
Level 1 (0–10 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	34	–	–	–	–	35	–	–	11	2.00
Feature 1 (10–20 cm)	–	–	1	1	1	1	1	1	6	–	–	1	1	1	1	1	3	323	–	–	–	–	342	6	3	86	26.00
Feature 1 (20–30 cm)	–	1	–	–	–	–	–	–	2	1*	–	1	–	1	1	4	–	104	–	–	–	–	116	1	1	65	11.00
Feature 1 (30–40 cm)	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1	–	13	–	–	–	–	15	–	–	129	6.00
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	–	–	4	–	–	27	5.00
Level 6 (50–60 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	2.50
Subtotal	–	1	2	1	–	1	1	1	8	1	–	2	1	2	2	7	3	478	–	–	–	–	512	7	4	329	52.50
Test Unit 2																											
Feature 1 (0–10 cm)	1	–	–	–	–	–	–	–	1	–	–	–	–	1	–	1	1	57	–	–	–	–	63	1	–	89	8.00
Feature 1 (10–20 cm)	–	1	3	–	–	–	–	–	5	–	1	4	–	–	–	1	–	294	–	–	–	1	310	17	2	474	47.50
Feature 1 (20–30 cm)	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	1	–	58	1	1	1	–	65	13	1	345	24.00
Feature 1 (30–40 cm)	–	–	1	–	–	–	–	–	2	–	–	2	–	–	1	2	–	65	–	–	–	–	72	27	1	77	18.00
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	0.25
Subtotal	1	1	4	–	–	–	–	–	11	–	1	6	–	1	1	5	1	474	1	1	1	1	510	58	4	987	97.75
Test Unit 3																											
Level 1 (0–10 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	12	–	–	–	–	13	–	–	3	0.25
Level 2 (10–20 cm)	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	1	54	–	–	–	–	58	3	–	19	8.50
Level 3 (20–30 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	3	1	–	3	0.25
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subtotal	1	–	–	–	–	–	–	–	1	–	–	–	–	–	–	2	1	69	–	–	–	–	74	4	–	25	9.00

Table 4-3, continued

Provenience	Alba Arrow Points	Scalloped Arrow Points	Untypeable Arrow Points	Arrow Point Preform	Dart Point	Martindale Dart Point	Thrall Dart Point	Perforator	Bifaces	Bifacial Knife	Scrapers	Miscellaneous Unifaces	Spokeshave	Graver	Multifunctional Tool	Edge-modified Flakes	Cores	Debitage	Mano	Metate	Modified Bone	Modified Mussel Shell	Artifact Totals	Unmodified Bones	Unmodified Mussel Shells	Burned Rock Counts	Burned rock Weights (kg)
	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	54	–	–	–	–	55	–	–	17	3.75
	–	2	–	–	–	–	–	–	7	–	1	2	–	–	1	1	2	225	–	–	–	–	240	9	–	57	7.00
	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	24	–	–	–	–	25	–	–	28	3.00
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	3	–	–	4	1.00
	Subtotal	–	2	–	–	1	–	–	–	7	–	2	2	–	–	1	1	2	306	–	–	–	–	323	9	–	106
Feature 1 Total	1	4	6	1	1	1	1	1	26	1	2	10	1	3	4	12	6	1,163	1	1	1	1	1,248	74	8	1,350	150.50
General Level Total	1	–	–	–	–	–	–	–	1	–	1	–	–	–	–	3	1	164	–	–	–	–	171	4	–	97	23.50
Total	2	4	6	1	1	1	1	1	27	1	3	10	1	3	4	15	7	1,327	1	1	1	1	1,419	78	8	1,447	174.00

* recycled untyped dart point

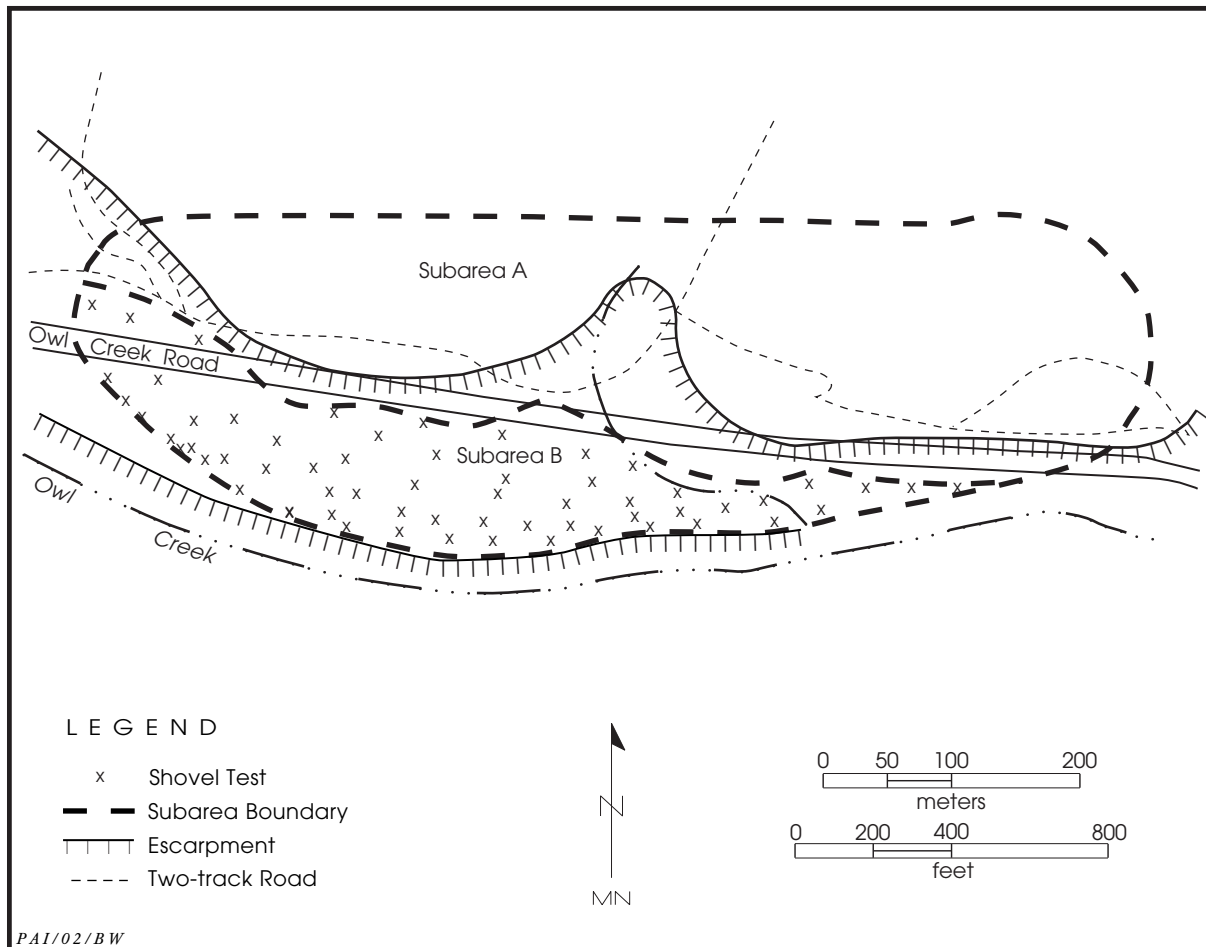


Figure 4-3. Site map of 41CV93 (modified from Trierweiler, ed. 1994:A690).

Subarea B consisted of two distinct Holocene terraces. The T_{1a} rested 7–9 m above the channel and was mantled with a relatively thick soil exhibiting an A (or Ap)-Bwk-C profile developed in clay loam that graded from gray brown to brown with depth. The deposits progressed from basal gravels rapidly into the clay loams with occasional gravel stringers indicating minor chute channel fills. These sediments appeared equivalent to the Fort Hood and West Range fills (Nordt 1992). The T_{1a} was separated from the strath terrace by a distinct, rounded scarp of weathered bedrock and from a lower T_{1b} by a scarp approximately 1 m high. The T_{1b} lay 4–6 m above the stream and was also underlain by basal gravels that graded into a gray brown clay loam exhibiting an A-Bwk-C profile. The T_{1b} fill probably correlated to the West Range alluvium. The Holocene deposits were 3 to 4 m thick, and the present channel was incised into bedrock. One edge-modified flake was observed on the

surface in Subarea B. It was unclear if the terraces had been plowed, but tracked vehicles, erosion, roads, cattle, and an old fence line disturbed the surface. Because Subarea B had the potential for intact cultural deposits, shovel testing was warranted.

On 15–21 December 1992, a crew excavated 60 shovel tests in Subarea B. Most tests were excavated to 40 cm, but several were terminated at 60 cm. Twelve shovel tests produced 14 flakes, 2 bone fragments, and 2 burned rocks. Most of the cultural materials were recovered from 0 to 20 cm in shovel tests in the western half of the subarea. Historic items also occurred from the surface to 20 cm in 6 shovel tests, with 2 of these also containing prehistoric artifacts. The testing results indicated that the upper 40 to 60 cm of deposits had limited archeological potential, but there might be intact cultural deposits at a greater depth. Recommended testing to determine National Register eligibility consisted of a

minimum of 3 backhoe trenches and 3 to 6 m² of hand-excavated test units in Subarea B (Trierweiler, ed. 1994:A692).

Based on its size, 41CV93 was classified as a lithic resource procurement area. The potential utility of Subarea A to address questions of lithic resource procurement and reduction were addressed by Mariah Associates on 8 April 1993 (Trierweiler, ed. 1994:A689–A693). Chert and impact zones were identified, mapped, and described, and chert samples were collected. Because Subarea A was extensively damaged, it was excluded from survey.

Work Performed

The site area and vertical exposures were inspected. No cultural materials were exposed in the cutbanks along Owl Creek or the ephemeral drainages, but chert cobbles and nodules, along with historic artifacts, littered the surface near the site's center.

On 19 October 2001, formal testing of 41CV93-B was completed (Figure 4-4). Twelve backhoe trenches were excavated across the site (Table 4-4). The deposits indicated that the northern half of 41CV93-B consisted of the upland (Killeen) surface and a Pleistocene terrace (T₂), rather than the previously identified T_{1a} surface. Tracked vehicles and scraping disturbed both of these surfaces extensively. A total of 3.45 m³ was hand excavated from three test units (Table 4-5). These excavations were either arbitrarily terminated or halted at dense gravels representing the base of the alluvial deposits.

Site Extent and Depth

The various surfaces comprising 41CV93-B have maximum dimensions of approximately 650 m east-west by 175 m north-south, covering an area of 113,750 m². Only the easternmost portion of the site, which measures 175x70 m, contains intact cultural components between 20 and 170 cm.

Definition of Analysis Units

Two analysis units are identified at 41CV93-B based on the presence of isolable cultural deposits. Analysis Unit 1 subsumes the Killeen surface, a Pleistocene terrace, the western two-thirds of the T_{1a} and T_{1b}, and an easternmost

remnant of the T_{1b}. Backhoe Trenches 1–8 and 12, along with Test Unit 1, were excavated on these surfaces; no stratigraphically discrete archaeological deposits were encountered. Two burned rock features buried in similar deposits in the T_{1a} and T_{1b} are defined as Analysis Unit 2, which encompasses Backhoe Trenches 9–11 and Test Units 2–3.

Analysis Unit 1

Excavation Results

Backhoe Trenches 1–8 and 12 revealed several depositional units beneath the four different surfaces occurring at 41CV93-B (Figure 4-5; see Appendix B). The Killeen surface and Pleistocene T₂ terrace consist of thin mantles of in situ, weathered soils and slopewash underlain by bedrock and the Jackson alluvium. The upper and lower West Range fills dominate the T_{1a} and T_{1b}. There may be a wedge of Fort Hood alluvium beneath the T_{1a}, and a drape of Ford alluvium caps the T_{1b}.

One edge-modified flake, recovered at 110–130 cm from Backhoe Trench 5, was the only cultural item encountered in the nine trenches. Three of 15 levels excavated from Test Unit 1 produced a total of six flakes. All of the cultural materials appeared in the West Range alluvium.

Discussion

There are thin, disturbed Holocene sediments on the higher Killeen and T_s surfaces, and few lithic artifacts are buried in most of the T₁ terrace. Given the lack of intact cultural deposits, Analysis Unit 1 has a low research potential.

Analysis Unit 2

Excavation Results

Near the eastern end of the site, Backhoe Trenches 9–11 exposed cultural materials and evidence of burning (charcoal and a charred tree stump) in the upper 160 cm of alluvial sediments (see Table 4-4). Although the deposits consist of the West Range and Ford deposits, most cultural materials are found in the upper West Range alluvium. Excavated on the proximal edge of the T_{1a} and near the center of the T_{1b}, Test Units 2

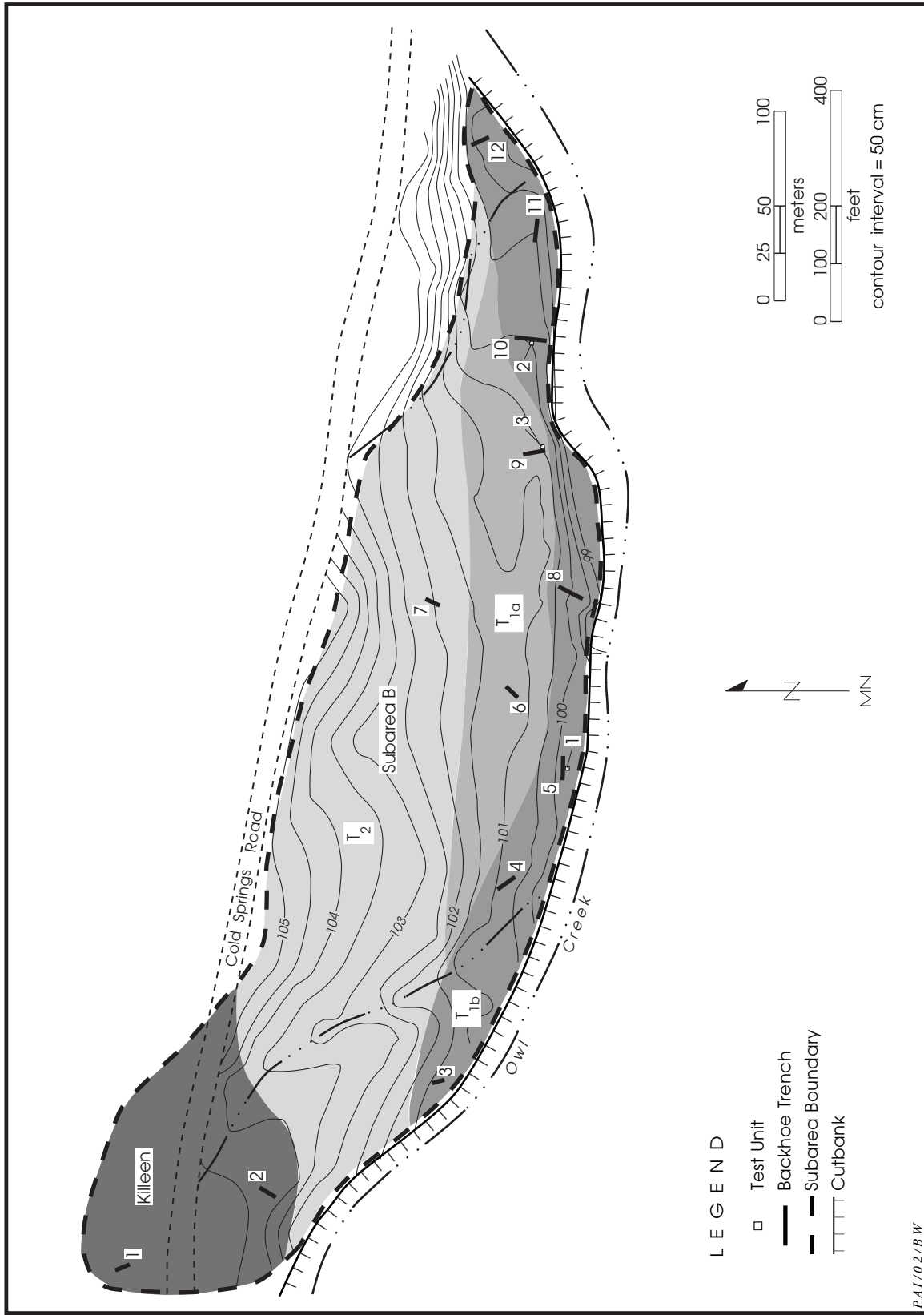


Figure 4-4. Map of 41CV93-B.

Table 4-4. Backhoe trench summary, 41CV93-B

Backhoe Trench	Maximum Dimensions	Setting	Cultural Observations
1	7.0 x 0.65 x 1.3 m	Killeen surface	–
2	8.0 x 0.65 x 0.65 m	Killeen surface	–
3	8.0 x 0.65 x 1.25 m	T _{lb}	–
4	9.0 x 0.65 x 2.2 m	T _{lb}	–
5	12.5 x 0.65 x 2.4 m	T _{lb}	edge-modified flake (collected) at ca. 110–130 cm
6	8.0 x 0.65 x 2.0 m	T _{la}	–
7	7.5 x 0.65 x 1.2 m	T ₂	–
8	13.0 x 0.65 x 2.2 m	T _{lb}	–
9	12.0 x 0.65 x 1.6 m	T _{la}	scattered burned rocks, caliche, and chert nodules at 35–40 cm
10	18.0 x 0.65 x 2.2 m	T _{lb}	burned tree in west wall at 90–120 cm; probable burned rock feature and <i>Rabdotus</i> snail shells in west wall at ca. 160 cm
11	10.5 x 0.65 x 2.2 m	T _{lb}	scattered charcoal at 140 cm just above gravel lens
12	9.0 x 0.65 x 1.7 m	T _{lb}	–

and 3 contained stratigraphically discrete hearths and associated cultural assemblages (Table 4-6). Test Unit 2 also produced 1 flake, 21 canid- to deer-sized mammal bones, and 5 vertebrate fragments at 30–60 cm. Collectively, the faunal remains may represent the same animal (see Appendix C).

Feature 1, encountered in Test Unit 3 at 28–40 cm, consisted of a single flat layer of 15 tabular burned rocks (5.5 kg). The feature's maximum excavated dimensions are 41 cm north-south by 36 cm east-west, but its overall size is unknown because it extends west beyond the test unit. The feature fill was devoid of artifacts and charred plant remains (see Appendix D). An alternately beveled dart point blade, debitage, one drilled *Lampsilis teres* mussel shell, and burned rocks were recovered from the matrix around the feature.

Feature 2 extended from 148 to 168 cm in Test Unit 2 (Figure 4-6). Two layers of tabular rocks and slabs ($n = 42$, 16.5 kg) were prepared as a lining in a shallow basin. A dense amount of charcoal was visible in the matrix, particularly under the rocks. Charcoal collected at 155 cm yielded a conventional radiocarbon age of 980 ± 40 B.P. (Beta-167177; see Appendix A). The excavated portion of the feature measured 100 cm east-west by 64 cm north-south, but its overall size was estimated to have been 120x66 cm based on the test unit and trench exposures. Sparse stone artifacts and burned rocks were present in and around the feature. One flotation sample contained oak and walnut woods, in addition to acorn fragments (see Appendix D). Overall, Features 1 and 2 mainly consisted of nonfossiliferous limestone less than 15 cm in size, and no disturbances were noted.

Table 4-5. Test unit summary, 41CV93-B

Test Unit	Location	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
1	South wall of BHT 5	1.0 x 0.5 m	surface	150 cm	0.75	–
2	West wall of BHT 10	1.0 x 1.0 m	surface	150 cm	1.50	–
		1.5 x 1.0 m	150 cm	180 cm	0.45	Feature 2 at 148–168 cm
3	East wall of BHT 9	1.0 x 1.0 m	surface	30 cm	0.30	–
		1.5 x 1.0 m	30 cm	60 cm	0.45	Feature 1 at 28–40 cm

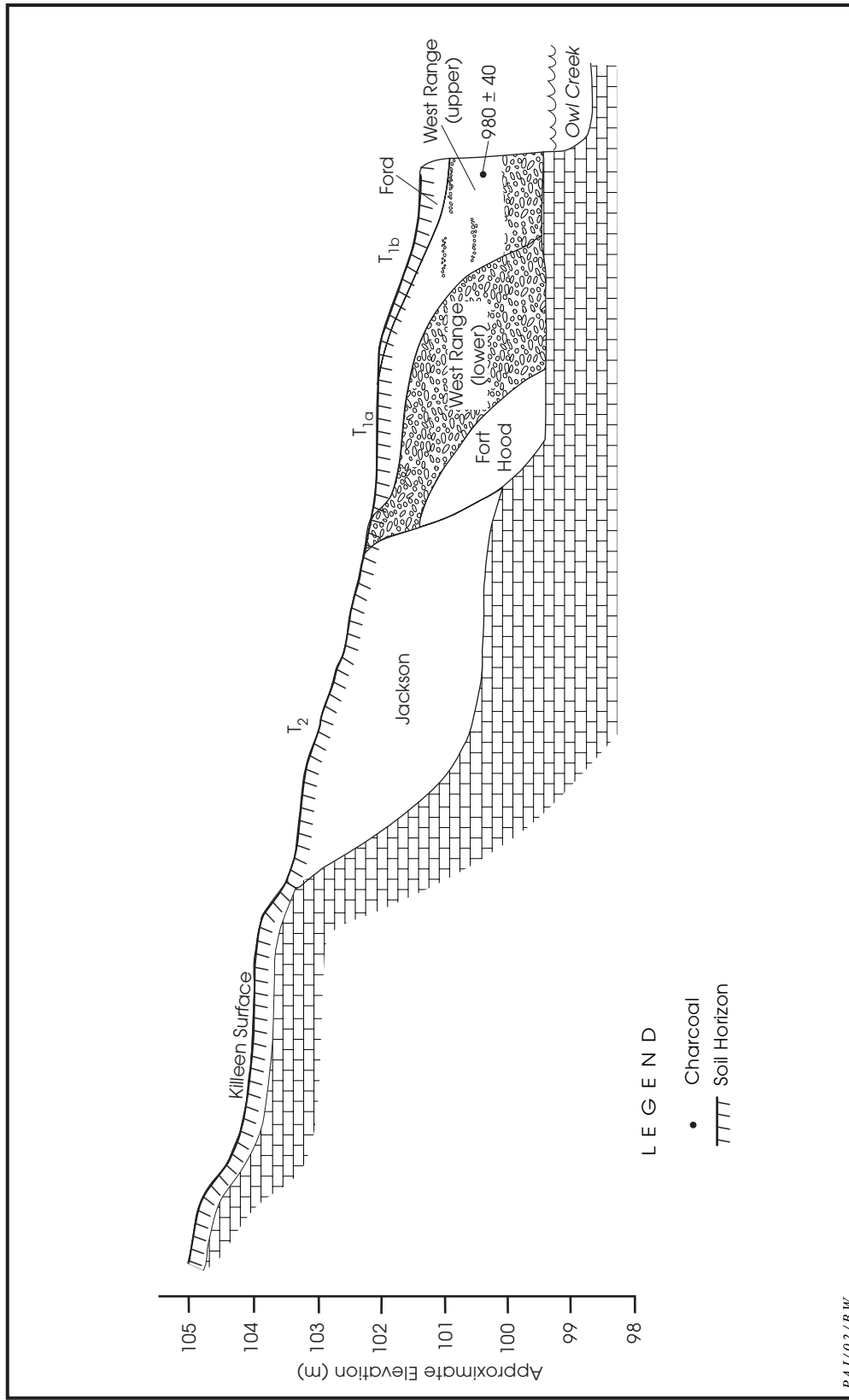


Figure 4-5. Schematic cross section of 41CV93-B.

Table 4-6. Summary of cultural materials from Analysis Unit 2, 41CV93-B

Provenience	Untypeable Dart Point	Edge-modified Flakes	Debitage	Modified Mussel Shell	Artifact Totals	Unmodified Bones	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 2								
Levels 1–3 (0–30 cm)	–	–	–	–	–	–	–	–
Level 4 (30–40 cm)	–	–	1	–	1	–	–	–
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–
Level 6 (50–60 cm)	–	–	–	–	–	26	–	–
Levels 7–13 (60–130 cm)	–	–	–	–	–	–	–	–
Level 14 (130–140 cm)	–	–	1	–	1	–	8	0.25
Level 15 (140–150 cm)	–	–	2	–	2	–	2	0.25
Level 16 (150–160 cm)	–	1	1	–	2	–	15	2.00
Feature 2 (148–168 cm)	–	–	3	–	3	–	42	16.50
Levels 17–18 (160–180 cm)	–	–	–	–	–	–	–	–
Subtotal	–	1	8	–	9	26	67	19.00
Test Unit 3								
Level 1 (0–10 cm)	–	–	7	–	7	–	–	–
Level 2 (10–20 cm)	1	–	7	–	8	–	–	–
Level 3 (20–30 cm)	–	–	2	–	2	–	2	0.10
Feature 1 (28–40 cm)	–	–	–	–	–	–	15	15.50
Level 4 (30–40 cm)	–	–	1	1	2	–	–	–
Level 5 (40–50 cm)	–	–	1	–	1	–	–	–
Level 6 (50–60 cm)	–	–	–	–	2	–	–	–
Subtotal	1	–	20	1	22	–	17	15.60
Total	1	1	28	1	31	26	84	34.60

Discussion

Based on the occurrence of spatially discrete hearths, there may be two cultural components in the upper West Range alluvium. There are no chronometric data for a shallowly buried hearth (Feature 1), but a calibrated radiocarbon date (2-sigma range) of A.D. 990–1160 from a deeper basin-shaped hearth (Feature 2) indicates use of the area during the Late Prehistoric period, Austin phase. The associated artifact assemblage is limited, but a drilled mussel shell represents an ornamental item. Acorn fragments in one hearth hint that this food resource may have been processed here. Although scattered charcoal and a burned tree stump were evident between 90 and 140 cm in two trenches spaced approximately 50 m apart, it is unclear if the burning represents a natural or cultural event.

Summary and Conclusions

Most of 41CV93-B corresponds to Analysis Unit 1, which did not yield intact cultural deposits. Nonetheless, sections of the T_{1a} and T_{1b} near the eastern margin of the site contain well-defined archeological deposits designated as Analysis Unit 2. Based on the testing results, the eastern portion of 41CV93-B, encompassing 175 m east-west by 70 m north-south (12,250 m²), is recommended as eligible for listing in the National Register of Historic Places.

41CV760

Site Setting

Situated within a steeply incised canyon, 41CV760 subsumes T₁ and T₀ surfaces at the

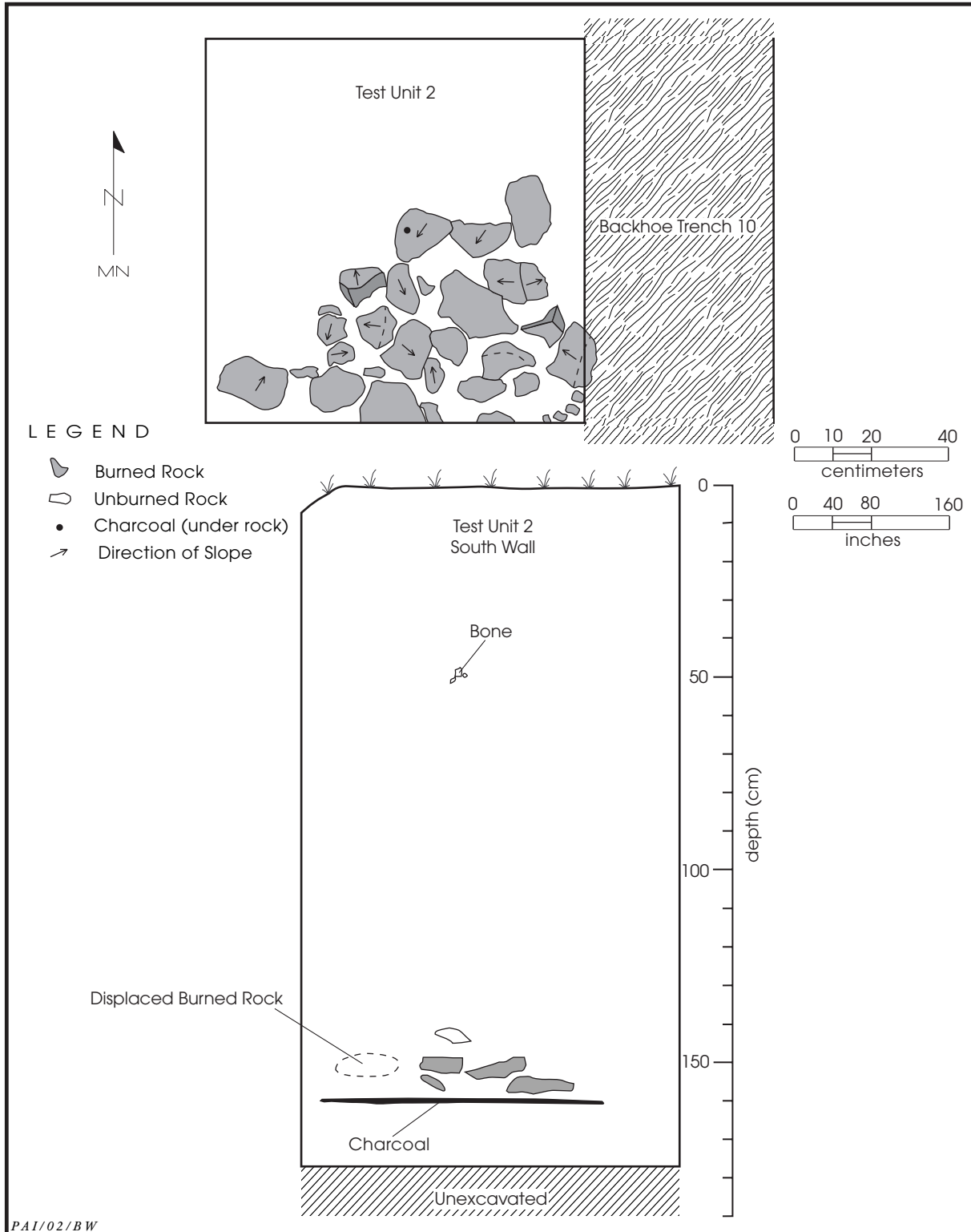


Figure 4-6. Plan and profile of Feature 2, Analysis Unit 2, 41CV93-B.

confluence of two unnamed tributaries of Owl Creek and in front of a high Pleistocene (T_2) terrace. A burned rock midden is buried in the T_1 terrace. The area supports a mixed riparian woodland including live oak, hackberry, possumhaw, pecan, juniper, and mountain laurel. Site elevation is 230 m above mean sea level.

Previous Work

On 19 June 1984, Texas A&M University recorded the site as a looted midden containing burned rocks, flakes, mussel shells, and a hammerstone (site form on file, Cultural Resources Management Office, Fort Hood). Only one tool, an end scraper, was collected. The site measured 80 m north-south by 40 m east-west, and the deposits appeared to be more than 30 cm thick. Looting and erosion damaged an estimated 70 percent of the site (Field No. 1151 in Carlson et al. [1986:236–237]).

On 21 September 1992, Mariah Associates visited and evaluated the site (Trierweiler, ed. 1994:A1029–A1031). Based on the extent of cultural materials and associated Holocene landforms, site size was reduced to 60x20 m. The site was in a confined tributary valley about 500 m upstream from the Owl Creek floodplain. There were three surfaces—a colluvial-erosional slope, the T_1 surface, and the tributary floodplain—in the vicinity. Most of the site occurred on a narrow interfluvial ridge formed by the T_1 surface between two branches of the tributary. At the northern site margin, there was a remnant of this T_1 surface on the left bank of the stream.

The T_1 surface rose 2–3 m above the tributary channel. The deposits showed an A-Bk-C to A-Bw-C profile probably equivalent to the West Range alluvium (Nordt 1992). This surface had been looted, and the upper 30 cm of disturbed fill exposed a moderate density of burned rocks, debitage, bifaces, and cores. One Castroville dart point and a modified flake were collected. The floodplain or T_0 rested 1.5 m above the channel bed and appeared to consist of West Range or Ford sediments. In places, there was a cumulic, gravelly dark brown A horizon underlain by a weak, cambic B (Bw) horizon. Upstream, at the southwest site margin, the cutbank revealed a buried Ab horizon at approximately 100 cm. Researchers noted that this paleosol most likely

correlated to the upper West Range alluvium and either pinched out or disappeared to the north. Because the site had the potential to yield intact cultural deposits, two shovel tests were excavated at this time.

One shovel test placed between looted areas on the T_1 was culturally sterile from surface to 40 cm. Excavated to 40 cm on the west edge of the T_0 , a second shovel test yielded two pieces of debitage and a burned rock at 0–10 cm. Although sparse cultural materials were encountered subsurface, both terraces had the potential to contain intact archeological deposits below the limits of testing. The recommended testing to determine National Register eligibility consisted of a minimum of three backhoe trenches and 2 to 4 m² of hand-excavated test units.

Work Performed

Even though trenching was recommended, the site is situated in endangered bird habitat, and no backhoe access was allowed. Several looters' holes and backdirt piles were re-located on the higher T_1 surface in the southern and northwest portions of the site; no evidence of recent looting was apparent. Looting near the southern site margin exposed a burned rock midden designated Feature 1. At the southwestern edge of the site, the paleosol previously observed in the T_0 cutbank was re-located and a few flakes were noted.

On 8 January 2002, formal testing of 41CV760 was completed (Figure 4-7). From four test units, 2.48 m³ was hand excavated (Table 4-7). Each excavation was terminated at dense colluvial gravels.

Site Extent and Depth

Based on the extent of the Holocene-aged terraces and cultural materials, the maximum site dimensions are modified to 92 m northeast-southwest by 37 m northwest-southeast, covering approximately 3,404 m². Feature 1 is restricted to the T_1 along the southern site margin. Here, the midden occurs between the surface and 50 cm and extends 20 m east-west by 19 m north-south. Although a smaller T_1 remnant at the northwest site margin shows evidence of looting, no midden deposits are present there. On the lower T_0 , a well-defined paleosol contains cultural materials at 80–100 cm.



Figure 4-7. Map of 41CV760.

Table 4-7. Test unit summary, 41CV760

Test Unit	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
1	1.0 x 1.0 m	surface	70 cm	0.70	Feature 1 at 0–50 cm
	0.5 x 0.5 m	70 cm	80 cm	0.03	–
2	1.0 x 1.0 m	surface	110 cm	1.10	–
3	1.0 x 1.0 m	surface	30 cm	0.30	Feature 1 at 0–20 cm
	1.0 x 0.5 m	30 cm	40 cm	0.05	–
4	1.0 x 0.5 m	surface	60 cm	0.30	–

Definition of Analysis Units

Analysis Units 1 and 2 correlate to the T₁ and T₀ surfaces. Each terrace contains stratigraphically discrete cultural deposits. Analysis Unit 1 includes two separate T₁ segments on opposite sides (north and south) of the tributary.

Analysis Unit 1

Excavation Results

Feature 1 is a burned rock midden exposed in Test Units 1 and 3 located on the southern T₁. Based on the test units and exposed materials in looter's holes, it occurs at the surface and varies from 20 to 50 cm thick. The late Holocene colluvial deposits consist of an anthropogenic Ab horizon (i.e., feature matrix) underlain by a gravelly Bwb horizon (see Appendix B). In Test Unit 1, the upper 10–15 cm of the midden was comprised of looter's backdirt, but the rest of the deposits were intact to 50 cm. The midden produced dense amounts of stone artifacts—including four Late Archaic dart points—and burned rocks (Table 4-8). Bifaces and edge-modified flakes account for 71.7 percent of the chipped stone tools, with little variability in the remaining tool types. The faunal remains consist of one vertebrate fragment and one unidentifiable mussel shell umbo. Most of the burned midden rocks from test units were angular and tabular pieces less than 10 cm in size, and none were larger than 16 cm long. Approximately 30 percent of the burned rocks were fossiliferous limestone. Identified as elm wood, charcoal collected from 40–50 cm in the midden yielded a conventional radiocarbon age of 100 ± 40 B.P. (Beta-167178; see Appendix A). Flotation and macroplant samples contained juniper, cf. plum,

and legume family woods (see Appendix D). Looting and roots have disturbed the feature. Sparse cultural materials were scattered in the gravelly deposits below the midden.

Excavated to 60 cm on the northwestern portion of the T₁, Test Unit 4 contains only nonmidden cultural deposits. The unit yielded a few stone tools, a moderate density of flakes, and sparse burned rocks. Most of the cultural materials occurred at 0–20 cm.

Discussion

At the southern end of the site, a burned rock midden (Feature 1) up to 50 cm thick is buried in a well-defined T₁ situated at the base of a steep Pleistocene terrace. Excavation results, cutbank exposures, and looter's holes indicate the midden covers the entire terrace section, an area of approximately 380 m². Although the feature has been looted, exposures reveal that a large part of the midden is preserved by 10–15 cm of recent colluvium and backdirt piles. Its modern age renders a calibrated radiocarbon date (2-sigma range) of A.D. 1670–1950 suspect, and the sample could be contaminated. The geomorphic assessment of the age of the sediments and the presence of Castroville, Darl, Ensor, and Kent dart points from midden and nonmidden contexts suggest the area was used during the Late Archaic period. These findings indicate that one dart point resembling a Thrall is most likely a recycled item. Fort Hood Yellow (31.7 percent) and Owl Creek Black (14.2 percent) are the most common chert types named in the entire lithic assemblage. These two resources are very close to the site. Overall, the tool kit is fairly homogeneous, which may reflect site-specific tasks. The macrobotanical materials consist of plant taxa commonly found within tributary valleys. No midden deposits occur in the northern T₁ area,

Table 4-8. Summary of cultural materials from Analysis Unit 1, 41CV760

Provenience	Castroville Dart Points	Ensor Dart Points	Kent Dart Point	Untyped Dart Point (cf. Darl)	Untyped Dart Point (cf. Thrall)	Untypeable Dart Point	Unidentifiable Points	Bifaces	End Scraper	Miscellaneous Uniface	Cobble Tool	Multifunctional Tool	Edge-modified Flakes	Cores	Debitage	Manos	Artifact Totals	Unmodified Bones	Unmodified Mussel Shell	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 1																					
Feature 1 (0–10 cm)	–	–	–	–	–	–	–	3	–	–	–	–	4	–	378	–	385	–	–	77	8.50
Feature 1 (10–20 cm)	–	–	–	–	–	–	–	1	–	–	–	–	4	–	374	–	379	1	–	65	7.00
Feature 1 (20–30 cm)	–	1	–	–	–	–	–	2	–	1	–	–	4	–	559	1	568	–	1	128	17.00
Feature 1 (30–40 cm)	1	–	1	1	–	–	–	2	–	–	–	1	–	1	761	–	768	–	–	219	20.50
Feature 1 (40–50 cm)	–	–	–	–	–	1	2	7	1	–	–	–	3	1	574	–	589	–	–	112	11.50
Level 6 (50–60 cm)	1	–	–	–	–	–	–	3	–	–	–	–	–	–	105	–	109	–	–	6	2.50
Level 7 (60–70 cm)	–	–	–	–	–	–	–	–	–	–	1	–	–	–	9	1	11	–	–	7	0.50
Level 8 (70–80 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subtotal	2	–	1	1	1	1	2	18	1	1	1	1	15	2	2,760	2	2,809	1	1	614	67.50
Test Unit 3																					
Feature 1 (0–10 cm)	–	1	–	–	–	–	–	2	–	–	–	–	–	–	248	–	251	–	–	41	5.00
Feature 1 (10–20 cm)	1	–	–	–	–	–	–	4	–	–	–	–	–	–	248	–	253	–	–	58	5.50
Level 3 (20–30 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2	–	–	2	0.20
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	0.20
Subtotal	1	1	–	–	–	–	–	6	–	–	–	–	–	–	498	–	506	–	–	104	10.90
Test Unit 4																					
Level 1 (0–10 cm)	–	1	–	–	–	–	–	1	–	–	–	–	–	–	316	–	318	–	–	14	2.00
Level 2 (10–20 cm)	–	–	–	–	–	–	–	–	–	–	–	–	3	–	85	–	88	–	–	8	0.75
Level 3 (20–30 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20	–	20	–	–	2	0.10
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	2	0.10
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–
Level 6 (50–60 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	0.10
Subtotal	–	1	–	–	–	–	–	1	–	–	–	–	3	–	423	–	428	–	–	27	3.05
Feature 1 Total	2	1	1	1	1	1	2	21	1	1	–	1	15	2	3,142	1	3,193	1	1	700	75.00
General Level Total	1	1	–	–	–	–	–	4	–	–	1	–	3	–	539	1	550	–	–	45	6.45
Total	3	2	1	1	1	1	2	25	1	1	1	1	18	2	3,681	2	3,743	1	1	745	81.45

but the cultural materials there are buried at the same approximate depths as Feature 1, suggesting contemporaneity.

Analysis Unit 2

Excavation Results

Ten of 11 levels excavated from Test Unit 2, situated on the T_0 , yielded stone artifacts, burned rocks, or both (Table 4-9). The profile is a composite of late Holocene alluvial and colluvial deposits, and there is a buried soil (Ab and Bwb horizons) at ca. 64–105 cm. A slight peak in cultural materials occurred in the paleosol at 80–100 cm, and charcoal collected at 99 cm yielded a conventional radiocarbon age of 1890 ± 40 B.P. (Beta-167179; see Appendix A).

Discussion

In the southern portion of the site, a lower T_0 surrounds the northern and western margins of the T_1 and is partially inset to the Pleistocene terrace slope. Within the T_0 , cultural materials and an associated calibrated radiocarbon date (2-sigma range) of A.D. 40–230 from the paleosol corresponds to a Late Archaic occupation. In the cutbank exposure, the buried soil is visible for approximately 5 m along the tributary, but its full lateral extent is unknown.

Summary and Conclusions

Site 41CV760 consists of distinct higher and lower terraces that contain spatially discrete

cultural components. Nonmidden deposits and a burned rock midden on the T_1 make up Analysis Unit 1, and an isolable cultural component preserved in a buried soil in the T_0 constitutes Analysis Unit 2. Relative and absolute dating suggest that most or all of the cultural deposits in these areas represent Late Archaic occupations. Based on the testing results, 41CV760 is recommended as eligible for listing in the National Register.

41CV769

Site Setting

Site 41CV769 is situated in a cleared field (T_1 surface) just north of Cold Springs Road and Owl Creek. Although there are oak-juniper woodlands just beyond the site area, many large trees have been removed, and only one large pecan tree remains on the site. Dense grasses and forbs limit surface visibility extremely. Site elevation is 210 m above mean sea level.

Previous Work

On 30 June 1984, Texas A&M University recorded the site as a lithic scatter extending 140 m north-south by 75 m east-west (site form on file, Cultural Resources Management Office, Fort Hood). Bifaces, scrapers, and debitage were observed, and two end scrapers were collected. Roads, military maneuvers, and erosion disturbed an estimated 10 percent of the site (Field No. 1165 in Carlson et al. [1986:243]).

Table 4-9. Summary of cultural materials from Analysis Unit 2, 41CV760

Test Unit 2	Edge-modified Flake	Debitage	Artifact Totals	Burned Rock Counts	Burned Rock Weights (kg)
Level 1 (0–10 cm)	—	—	—	1	0.25
Level 2 (10–20 cm)	—	1	1	3	0.50
Level 3 (20–30 cm)	—	—	—	4	0.50
Level 4 (30–40 cm)	—	2	2	1	0.25
Level 5 (40–50 cm)	—	1	1	5	0.30
Level 6 (50–60 cm)	1	—	1	4	0.25
Level 7 (60–70 cm)	—	3	3	2	0.10
Level 8 (70–80 cm)	—	—	—	5	0.30
Level 9 (80–90 cm)	—	5	5	13	2.50
Level 10 (90–100 cm)	—	3	3	7	2.00
Level 11 (100–110 cm)	—	—	—	—	—
Total	1	15	16	45	6.95

On 6 October 1992, Mariah Associates visited and evaluated the site (Trierweiler, ed. 1994:A1038–A1040). Site size was modified to 120x80 m based on the extent of exposed cultural materials. The site consisted of a sparse scatter of debitage and burned rocks on a broad, level alluvial terrace. Dense grass cover afforded little surface visibility, and a single, very large pecan tree dominated the site. The terrace rested 6–8 m above the modern channel and extended north to the bedrock slope defining the limits of the Owl Creek valley. A rounded scarp marking the boundary between the upper terrace containing the site and a second, lower alluvial surface delimited the western margin. This lower terrace was associated with an in-filled minor tributary that lay approximately 1 m below the surface of the site. The only sediments exposed on site were in a shallow, beveled road cut near the southern site limits. At this location, the 50- to 75-cm-thick deposits revealed an A-Bw-C sequence probably correlating to the West Range alluvium (Nordt 1992). It was thought that the deposit could represent a thin veneer capping the Fort Hood alluvium. The matrix was a gray brown loam to clay loam with laterally confined lenses of gravel that represented minor chute channels. In this road cut, burned rocks and debitage appeared to be eroding from cultural strata 20–40 cm below the present surface. Disturbances to the site included roads, erosion, vehicular traffic, and bioturbation. Because the site had the potential to yield intact cultural deposits, shovel testing was needed.

On 6 October 1992, a crew excavated nine shovel tests to 40 cm. Each test contained debitage, but only one produced two small burned rocks. A total of 78 flakes were recovered, with almost 85 percent ($n = 66$) found in the upper 20 cm of deposits. Three shovel tests placed along the western site margin near the scarp edge yielded three-fourths of the artifacts. The results suggested that cultural deposits may be shallowly buried in the terrace, but the contextual integrity of the remains was unclear. Researchers also noted that intact archeological materials could be present below the limits of shovel testing. Recommended testing to determine National Register eligibility consisted of a minimum of two backhoe trenches and 2 to 4 m² of hand-excavated test units (Trierweiler, ed. 1994:A1040).

Work Performed

Although surface visibility was poor, burned rocks and debitage were observed near the western edge of the terrace and along Cold Springs Road. Vegetation clearing and tracked vehicles had disturbed the site area.

On 6 November 2001, formal testing was completed at 41CV769 (Figures 4-8 and 4-9). Nine backhoe trenches and nine test units were excavated. Seven of the backhoe trenches excavated across the T₁ surface encountered cultural materials between the surface and 280 cm (Table 4-10). The backhoe was then used to remove between 40 and 120 cm of overburden by scraping down to the top of cultural deposits exposed in trenches. Eight of the test units were placed in scraped areas excavated perpendicular to backhoe trenches where cultural materials were observed (Table 4-11). Two contiguous test units were excavated in each of four scraped areas where the upper 40 to 111 cm of fill was removed mechanically to facilitate hand excavation of the deeper deposits. Only Test Unit 7 was excavated from the present ground surface. A total of 13.72 m³ was hand excavated, and each test unit was terminated at an arbitrary depth.

Site Extent and Depth

Based on the testing results and the extent of the Holocene-aged terrace (T₁), the maximum site dimensions are enlarged to 255 m east-west by 180 m north-south, covering an approximate area of 45,900 m². Multiple prehistoric occupations, represented by one feature and at least two vertically separated lenses of cultural materials, were encountered between 30 and 310 cm.

Definition of Analysis Units

The absence of materials appropriate for dating and the recovery of only one diagnostic artifact make it difficult to establish a chronological sequence for the isolable cultural deposits confidently. The geomorphic setting and depositional history do provide a gross timeframe for occupations of the area, but the materials cannot be separated into meaningful assemblages without more chronological data. Therefore, the entire site is considered as one analysis unit.

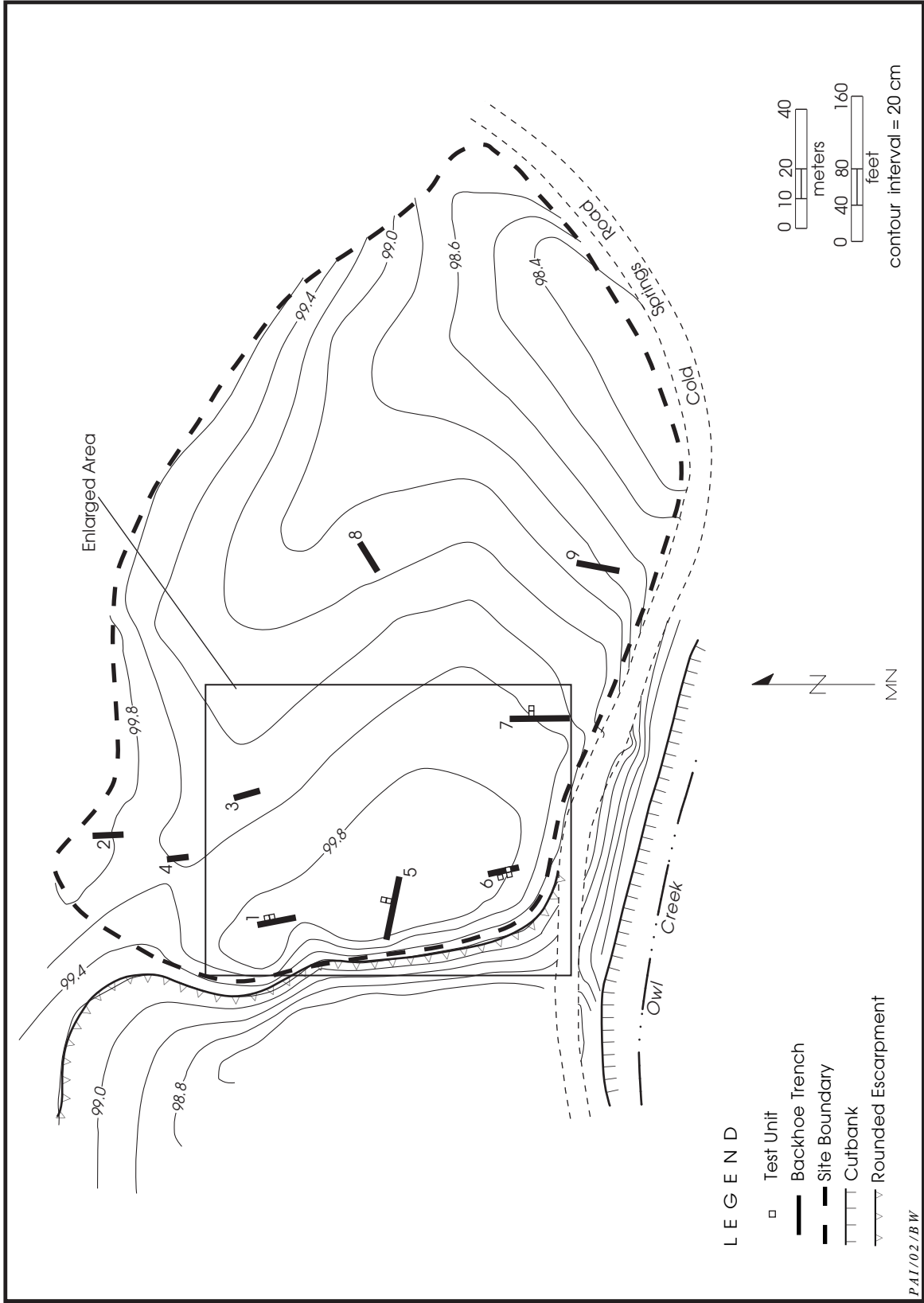


Figure 4-8. Map of 41CV769.

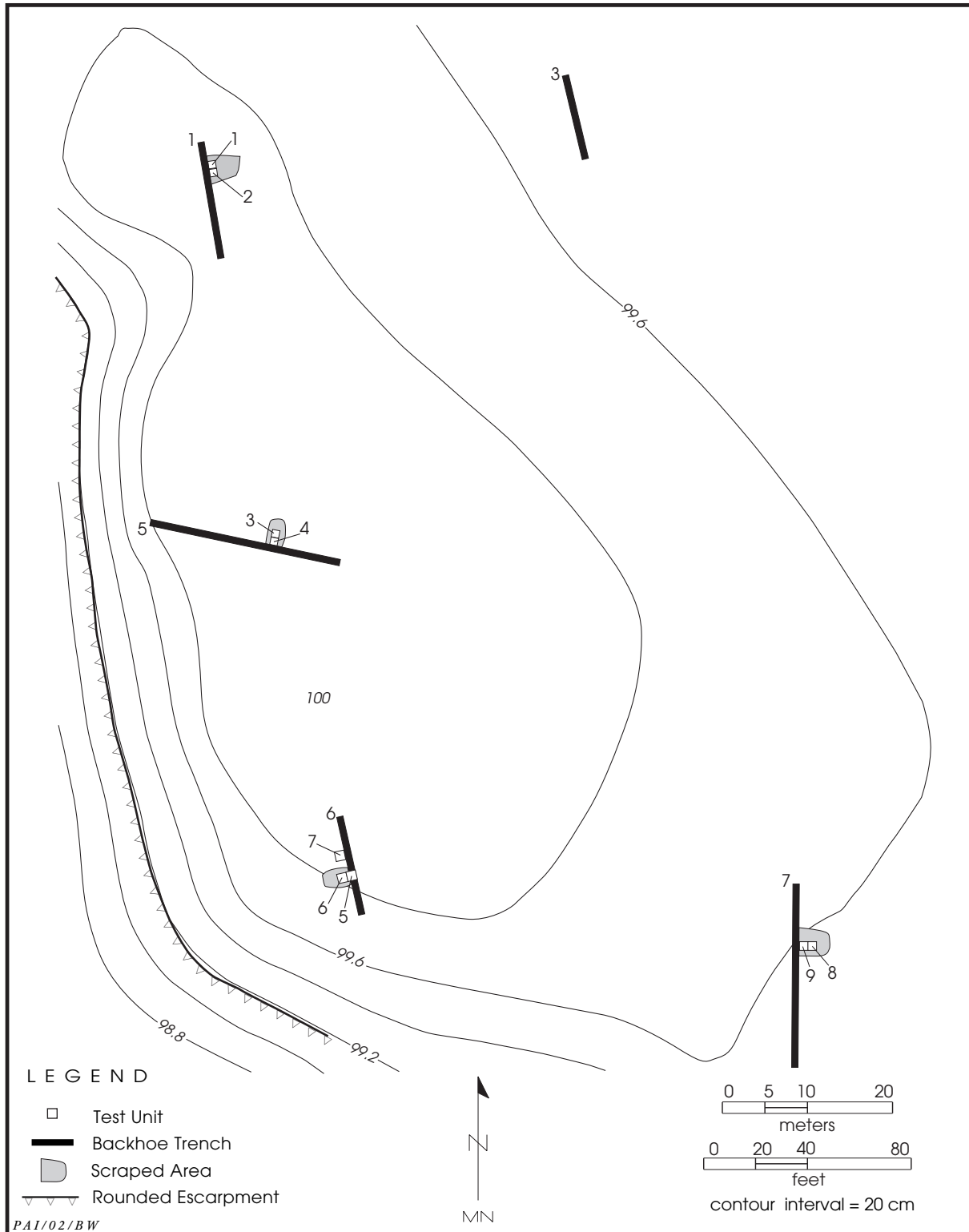


Figure 4-9. Detailed map of excavation areas at 41CV769.

Table 4-10. Backhoe trench summary, 41CV769

Backhoe Trench	Maximum Dimensions	Cultural Observations
1	14.5 x 0.65 x 3.2 m	scattered lithic artifacts, bone, and burned rocks at 0–40 cm; <i>Rabdotus</i> snail shells and occasional flakes at 100–160 cm; 1 flake in situ at 280 cm; collected 1 scraper and 1 burned bone at 0–20 cm and a biface from the backdirt
2	10.00 x 0.65 x 1.00 m	–
3	12.50 x 0.65 x 2.40 m	sparse debitage at ca. 150–200 cm
4	7.00 x 0.65 x 1.40 m	–
5	23.00 x 0.65 x 3.20 m	scattered debitage and burned rocks at 15–20 cm; burned rock and chert chunk in north wall at 175 cm
6	10.50 x 0.65 x 1.30 m	scattered debitage and burned rocks at 40–45 cm; burned rock cluster at 45 cm; several flakes at 130 cm
7	20.00 x 0.65 x 3.20 m	scattered debitage, burned rocks, and <i>Rabdotus</i> snail shells at 35–85 cm; debitage at 150–160 cm; piece of burned chert at
8	10.00 x 0.65 x 2.40 m	2 flakes and 1 small burned rock at 80–90 cm
9	12.00 x 0.65 x 2.40 m	debitage in west wall at 50 cm; debitage and <i>Rabdotus</i> snail shells at 70–90 cm

Excavation Results

Generally, the trenches exposed a 20- to 45-cm thick plow zone underlain by the Fort Hood and Georgetown alluviums (see Appendix B). Two stone tools and one burned canid- to deer-sized mammal bone were collected from the plow zone and backdirt of Backhoe Trench 1, but all

of the cultural materials from the manual excavations were buried in the Fort Hood alluvium (Table 4-12). The only exception is a single burned rock found in Georgetown alluvium at 270–280 cm in Test Unit 9.

Feature 1 consisted of five imbricated burned rocks (1.2 kg) along the east wall of Test Unit 7. Present from 30 to 40 cm, the concentra-

Table 4-11. Test unit summary, 41CV769

Test Unit	Location*	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Feature
1	Scraped area, east wall of BHT 1	1.0 x 1.0 m	111 cm	300 cm	1.85	–
2	Scraped area, east wall of BHT 1	1.0 x 1.0 m	105 cm	330 cm	2.15	–
3	Scraped area, north wall of TU 4	1.0 x 1.0 m	54 cm	200 cm	1.45	–
4	Scraped area, north wall of BHT 5	1.0 x 1.0 m	52 cm	200 cm	1.45	–
5	Scraped area, west wall and bottom of BHT 6	1.0 x 0.4 m	40 cm	120 cm	0.32	–
		1.0 x 1.0 m	120 cm	150 cm	0.30	–
6	Scraped area, west wall of BHT 6	1.0 x 1.0 m	41 cm	150 cm	1.05	–
7	west wall of BHT 6	1.0 x 1.0 m	surface	140 cm	1.40	Feature 1 at 30–40 cm
8	Scraped area, east wall of TU 9	1.0 x 1.0 m	100 cm	290 cm	1.90	–
9	Scraped area, east wall of BHT 7	1.0 x 1.0 m	100 cm	290 cm	1.85	–

* BHT = backhoe trench, TU = test unit

tion was one to two layers thick and measured 18 cm north-south by 15 cm east-west. Although a portion of the feature was removed during trenching, its estimated maximum size was 25x30 cm. The rocks were highly weathered, angular and subangular pieces of limestone less than 10 cm in size. The feature fill contained one flake, and there were 75 pieces of debitage in the surrounding matrix at 30–40 cm. One flotation sample lacked charred macrobotanical remains (see Appendix D).

Some 118 (81.9 percent) of the 144 levels excavated from 9 test units contained sparse stone tools and a high density of debitage, but only 13 levels (9.0 percent) produced burned rocks. There are only low quantities of stone artifacts in most levels, but 2 prominent cultural zones are identified by significant increases in artifact density. One cultural lens was found in Test Units 3 and 4, where more than half the lithic materials occurred from 60 to 80 cm. A 40-cm-thick zone produced more than two-thirds of the stone artifacts in Test Units 1 and 2. Here, the cultural zone appears to slope gradually from north to south. It dips about 10 cm from 260–300 cm in Test Unit 1 to 270–310 cm in Test Unit 2. No plant materials were present in eight flotation samples collected from general excavation levels.

Discussion

The cultural materials at this site are buried in Fort Hood alluvium and are Early to Middle Archaic in age. A single Travis dart point (Middle Archaic) is the only diagnostic, and no datable organic materials were recovered. Lithic artifacts dominate the assemblages, but the sample is too limited to show much diversity in tool types. Most of the identifiable cherts among the stone tools and debitage are Fort Hood Yellow and Owl Creek Black, both available nearby. One burned rock feature and two lenses of cultural materials are present within the Fort Hood alluvial deposits, and intact Early to Middle Archaic cultural components are rare on Fort Hood. Site 41CV769 is recommended as eligible for listing in the National Register.

41CV1023

Site Setting

Site 41CV1023 encompasses an exposure of

Paluxy Formation sands, an erosional slope, Holocene alluvial and strath terraces, and a rockshelter. Stampede Creek, two abandoned stream channels, and an unnamed tributary bisect the area. The higher surfaces support junipers, oaks, pecans, and grasses, but a dense riparian woodland and understory cover the floodplain. Site elevation is 245–260 m above mean sea level.

Previous Work

On 1 May 1985, Texas A&M University recorded the site as a multicomponent campsite with extensive cooking activity (site form on file, Cultural Resources Management Office, Fort Hood). Burned rock concentrations and scatters—along with cores, debitage, and stone tools—were noted. One Pedernales and a Darl dart point were collected. The site dimensions were 325x250 m, and tracked and wheeled vehicles had disturbed an estimated 20 percent of the area (Field No. 1500 in Carlson et al. [1988:176]).

On 14 February 1992, Mariah Associates visited and evaluated the site (Trierweiler, ed. 1994:A1164–A1167). Because archeological potentials and geomorphic contexts differed, the site was divided into Subareas A through D (Figure 4-10). Based on the lateral extent of cultural materials and Holocene deposits, the site dimensions were modified to 330x200 m.

The eastern one-third of the site consisted of Subarea A, a gently sloping upland draped with sandy sediments derived from the Paluxy Formation. The soil formed within this deposit was strongly developed with an A-Bt-R or an A-AE-Bw-Bt-R profile. The A, AE, and Bw horizons consisted of fine sand to fine sandy loam and may have been active colluvial mantles during the Holocene. The argillic Bt horizon was a clay to sandy clay and clearly Pleistocene in age. Features 1 through 4 (burned rock concentrations) were discovered in and along road cuts. The concentrations ranged from 60 to 350 cm long, 20 to 60 cm wide, and 20 to 35 cm deep. Lithic artifacts were also observed in Feature 4. Military maneuvers affected the surface of Subarea A, but there appeared to be intact profiles present.

Subarea B, the erosional slope, was situated directly below and west of Subarea A. A 10-cm-thick A horizon underlain by bedrock was ex-

Table 4-12. Summary of cultural materials from 41CV769

Provenience	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage	Artifact Totals	Unmodified Bone	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 1													
surface–123 cm*	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 12 (110–120 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 15 (140–150 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 16 (150–160 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 17 (160–170 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–
Level 18 (170–180 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 19 (180–190 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 20 (190–200 cm)	–	–	–	–	–	–	–	–	3	3	–	–	–
Level 21 (200–210 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–
Level 22 (210–220 cm)	–	–	–	–	–	–	–	–	11	11	–	–	–
Level 23 (220–230 cm)	–	–	–	–	–	–	–	–	3	3	–	–	–
Level 24 (230–240 cm)	–	–	–	–	–	–	–	–	16	16	–	–	–
Level 25 (240–250 cm)	–	–	–	–	–	–	–	–	13	13	–	–	–
Level 26 (250–260 cm)	–	–	–	–	–	–	–	–	9	9	–	–	–
Level 27 (260–270 cm)	–	–	–	–	–	–	–	–	55	55	–	–	–
Level 28 (270–280 cm)	–	–	2	–	–	–	–	–	51	53	–	–	–
Level 29 (280–290 cm)	–	–	–	–	–	–	–	–	42	42	–	–	–
Level 30 (290–300 cm)	–	–	–	1	–	–	–	–	29	30	–	–	–
Subtotal	–	–	2	1	–	–	–	–	243	246	–	–	–
Test Unit 2													
surface–121 cm*	–	–	–	–	–	–	–	–	–	–	–	–	–
105–110 cm	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 12 (110–120 cm)	–	–	–	–	–	–	–	–	3	3	–	–	–
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	5	5	–	–	–

Table 4-12, continued

Provenience	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage	Artifact Totals	Unmodified Bone	Burned Rock Counts	Burned Rock Weights (kg)
Level 15 (140–150 cm)	—	—	—	—	—	—	—	—	1	1	—	—	—
Level 16 (150–160 cm)	—	—	—	—	—	—	—	—	1	1	—	—	—
Level 17 (160–170 cm)	—	—	—	—	—	—	—	—	1	1	—	—	—
Level 18 (170–180 cm)	—	—	—	—	—	—	—	—	4	4	—	—	—
Level 19 (180–190 cm)	—	—	—	—	—	—	—	—	—	—	—	—	—
Level 20 (190–200 cm)	—	—	—	—	—	—	—	—	5	5	—	—	—
Level 21 (200–210 cm)	—	—	—	—	—	—	—	—	1	1	—	—	—
Level 22 (210–220 cm)	—	—	—	—	—	1	—	—	1	2	—	—	—
Level 23 (220–230 cm)	—	—	—	—	—	—	—	—	5	5	—	—	—
Level 24 (230–240 cm)	—	—	—	—	—	—	—	—	26	26	—	—	—
Level 25 (240–250 cm)	—	—	—	—	—	—	—	—	9	9	—	—	—
Level 26 (250–260 cm)	—	—	—	—	—	—	1	—	11	12	—	—	—
Level 27 (260–270 cm)	—	—	2	—	—	—	—	—	19	21	—	—	—
Level 28 (270–280 cm)	—	—	—	—	—	—	—	—	47	47	—	—	—
Level 29 (280–290 cm)	—	—	1	—	—	—	—	—	101	102	—	—	—
Level 30 (290–300 cm)	—	—	1	—	—	2	—	1	76	80	—	—	—
Level 31 (300–310 cm)	—	—	—	—	—	1	—	—	48	49	—	—	—
Level 32 (310–320 cm)	—	—	—	—	—	—	—	—	15	15	—	—	—
Level 33 (320–330 cm)	—	—	—	—	—	—	—	—	12	12	—	—	—
Subtotal	—	—	4	—	—	4	1	1	392	402	—	—	—
Test Unit 3 surface-54 cm*	—	—	—	—	—	—	—	—	—	—	—	—	—
54–60 cm	—	—	—	—	—	—	—	—	2	2	—	—	—
Level 7 (60–70 cm)	—	—	1	—	—	—	—	—	34	35	—	—	—
Level 8 (70–80 cm)	—	—	—	—	—	1	—	—	15	16	—	—	—
Level 9 (80–90 cm)	—	—	—	—	—	1	—	—	1	2	—	—	—
Level 10 (90–100 cm)	—	—	—	—	—	—	—	—	5	5	—	—	—
Level 11 (100–110 cm)	—	—	—	—	—	—	—	—	5	5	—	—	—

Table 4-12, continued

Provenience	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage	Artifact Totals	Unmodified Bone	Burned Rock Counts	Burned Rock Weights (kg)
Level 12 (110–120 cm)	–	–	–	–	–	–	–	–	3	3	–	–	–
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	7	7	–	–	–
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 15 (140–150 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 16 (150–160 cm)	–	–	–	–	–	–	–	–	5	5	–	–	–
Level 17 (160–170 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–
Level 18 (170–180 cm)	–	–	–	–	–	–	–	–	8	8	–	–	–
Level 19 (180–190 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 20 (190–200 cm)	–	–	–	–	–	–	–	–	6	6	–	–	–
Subtotal	–	–	1	–	–	2	–	–	98	101	–	–	–
Test Unit 4	–	–	–	–	–	–	–	–	–	–	–	–	–
surface–52 cm*	–	–	–	–	–	–	–	–	–	–	–	–	–
52–60 cm	–	1	–	–	–	–	–	–	7	8	–	–	–
Level 7 (60–70 cm)	–	–	–	–	–	–	–	–	59	59	–	–	–
Level 8 (70–80 cm)	–	–	–	–	–	–	–	–	17	17	–	–	–
Level 9 (80–90 cm)	–	–	–	–	–	–	–	–	4	4	–	–	–
Level 10 (90–100 cm)	–	–	–	–	–	–	–	–	8	8	–	–	–
Level 11 (100–110 cm)	–	–	–	–	–	–	–	–	5	5	–	–	–
Level 12 (110–120 cm)	–	–	–	–	–	–	–	–	3	3	–	–	–
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–
Level 15 (140–150 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–
Level 16 (150–160 cm)	–	–	–	–	–	–	–	–	4	4	–	–	–
Level 17 (160–170 cm)	–	–	–	–	–	–	–	–	7	7	–	–	–
Level 18 (170–180 cm)	–	–	–	–	–	–	–	–	6	6	–	1	0.10
Level 19 (180–190 cm)	–	–	1	–	–	–	–	–	5	6	–	–	–
Level 20 (190–200 cm)	–	–	–	–	–	–	–	–	3	3	–	–	–
Subtotal	–	1	1	–	–	–	–	–	133	135	–	1	0.10

Table 4-12, continued

Provenience	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage	Artifact Totals	Unmodified Bone	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 5	-	-	-	-	-	-	-	-	-	-	-	-	-
surface-40 cm*	-	-	-	-	-	-	-	-	-	-	-	-	-
Level 5 (40-50 cm)	-	-	-	-	-	-	-	-	4	4	-	-	-
Level 6 (50-60 cm)	-	-	-	-	-	-	-	-	6	6	-	-	-
Level 7 (60-70 cm)	-	-	-	-	-	-	-	-	2	2	-	-	-
Level 8 (70-80 cm)	-	-	-	-	-	-	-	-	5	5	-	-	-
Level 9 (80-90 cm)	-	-	-	-	-	-	-	-	1	1	-	-	-
Level 10 (90-100 cm)	-	-	-	-	-	-	-	-	3	3	-	-	-
Level 11 (100-110 cm)	-	-	-	-	-	-	-	-	6	6	-	-	-
Level 12 (110-120 cm)	-	-	-	-	-	-	-	-	6	6	-	-	-
Level 13 (120-130 cm)	-	-	-	-	-	-	-	-	7	7	-	-	-
127-132 cm	-	-	-	-	-	-	-	-	9	9	-	-	-
Level 14 (130-140 cm)	-	-	-	-	-	-	-	-	10	10	-	-	-
Level 15 (140-150 cm)	-	-	-	-	-	-	-	-	6	6	-	-	-
Subtotal	-	-	-	-	-	-	-	-	65	65	-	-	-
Test Unit 6	-	-	-	-	-	-	-	-	-	-	-	-	-
surface-41 cm*	-	-	-	-	-	-	-	-	-	-	-	-	-
41-50 cm	-	-	-	-	-	-	-	-	6	6	-	-	-
Level 6 (50-60 cm)	-	-	-	-	-	-	-	-	18	18	-	-	-
Level 7 (60-70 cm)	-	-	-	-	-	-	-	-	11	11	-	1	0.10
Level 8 (70-80 cm)	-	-	-	-	-	-	-	-	11	11	-	1	0.10
Level 9 (80-90 cm)	-	-	-	-	-	-	-	-	2	2	-	1	0.20
Level 10 (90-100 cm)	-	-	-	-	-	-	-	-	7	7	-	-	-
Level 11 (100-110 cm)	-	-	-	-	-	-	-	-	15	15	-	-	-
Level 12 (110-120 cm)	-	-	-	-	-	-	-	-	11	11	-	-	-
Level 13 (120-130 cm)	-	-	-	-	-	-	-	-	28	28	-	-	-
Level 14 (130-140 cm)	-	-	-	-	-	-	-	-	12	12	-	-	-
Level 15 (140-150 cm)	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	-	-	-	-	-	-	121	121	-	3	0.40

Table 4-12, continued

Provenience	Artifact Totals										Unmodified Bone			Burned Rock Counts			Burned Rock Weights (kg)		
	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage										
Test Unit 7																			
surface–20 cm**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Level 3 (20–30 cm)	–	–	1	–	–	–	–	–	28	29	–	–	–	–	1	–	0.10	–	
Feature 1 (30–40 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–	–	5	–	1.20	–	
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	75	75	–	–	–	–	4	–	0.70	–	
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	11	11	–	–	–	–	–	–	–	–	
Level 6 (50–60 cm)	–	–	1	–	–	–	–	–	15	16	–	–	–	–	1	–	0.20	–	
Level 7 (60–70 cm)	–	–	–	–	–	–	–	–	4	4	–	–	–	–	–	–	–	–	
Level 8 (70–80 cm)	–	–	–	–	–	–	–	–	6	6	–	–	–	–	–	–	–	–	
Level 9 (80–90 cm)	–	–	–	–	–	–	–	–	7	7	–	–	–	–	–	–	–	–	
Level 10 (90–100 cm)	–	–	–	–	–	–	–	–	15	15	–	–	–	–	–	–	–	–	
Level 11 (100–110 cm)	–	–	–	–	–	–	–	–	7	7	–	–	–	–	–	–	–	–	
Level 12 (110–120 cm)	–	–	–	–	–	–	–	–	6	6	–	–	–	–	–	–	–	–	
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	5	5	–	–	–	–	–	–	–	–	
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	2	2	–	–	–	–	–	–	–	–	
Subtotal	–	–	2	–	–	–	–	–	182	184	–	–	–	–	11	–	2.20	–	
Test Unit 8																			
surface–104 cm*	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Level 11 (100–110 cm)	–	–	–	–	–	–	–	–	12	12	–	–	–	–	–	–	–	–	
Level 12 (110–120 cm)	–	–	1	–	–	–	–	–	15	16	–	–	–	–	1	–	0.25	–	
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	5	5	–	–	–	–	2	–	0.10	–	
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	12	12	–	–	–	–	1	–	0.10	–	
Level 15 (140–150 cm)	–	–	–	–	–	–	–	–	5	5	–	–	–	–	–	–	–	–	
Level 16 (150–160 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	
Level 17 (160–170 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Level 18 (170–180 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Level 19 (180–190 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Level 20 (190–200 cm)	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	

Table 4-12, continued

Provenience	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage	Artifact Totals	Unmodified Bone	Burned Rock Counts	Burned Rock Weights (kg)
Level 21 (200–210 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 22 (210–220 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 23 (220–230 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 24 (230–240 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 25 (240–250 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 26 (250–260 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 27 (260–270 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 28 (270–280 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 29 (280–290 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Subtotal	1	1	1	1	1	1	1	1	51	52	1	4	0.45
Test Unit 9 surface–106 cm*	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 11 (100–110 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 12 (110–120 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 13 (120–130 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 14 (130–140 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 15 (140–150 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 16 (150–160 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 17 (160–170 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 18 (170–180 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 19 (180–190 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 20 (190–200 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 21 (200–210 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 22 (210–220 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 23 (220–230 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 24 (230–240 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 25 (240–250 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1
Level 26 (250–260 cm)	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 4-12, continued

	Travis Dart Point	Untypeable Dart Point	Bifaces	Miscellaneous Uniface	Multifunctional Tool	Edge-modified Flakes	Core	Tested Cobble	Debitage	Artifact Totals	Unmodified Bone	Burned Rock Counts	Burned Rock Weights (kg)
Provenience													
Level 27 (260–270 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 28 (270–280 cm)	–	–	–	–	–	–	–	–	–	–	–	1	0.10
Level 29 (280–290 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Subtotal	1	–	–	–	–	1	–	–	45	47	–	2	0.20
Backhoe Trench 1	–	–	1	–	1	–	–	–	–	2	1	–	–
Total	1	1	12	1	1	7	1	1	1,330	1,355	1	21	3.35

* mechanically removed

** manually removed—plow zone

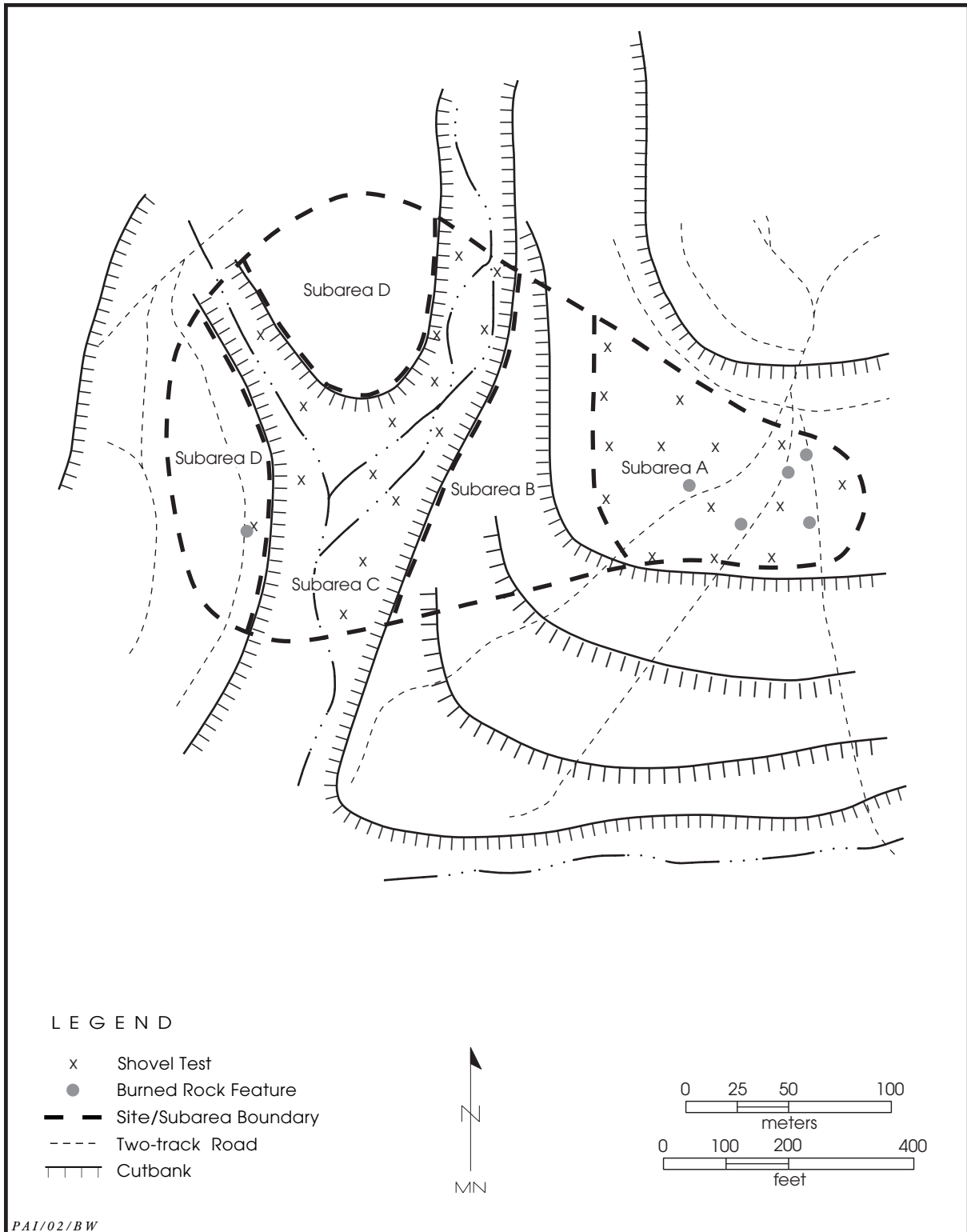


Figure 4-10. Site map of 41CV1023 (modified from Trierweiler, ed. 1994: A1165). On Subarea A, only 14 of 18 shovel test locations were plotted.

posed in a few places. Sparse debitage, a few stone tools, and burned rocks were scattered across the surface. Overall, sheet erosion had substantially denuded the slope.

Subarea C consisted of the Holocene-aged floodplain within a deeply incised valley along Stampede Creek and its tributary. A single terrace surface rested 1.0–1.5 m above the present channel, and cutbank exposures revealed two alluvial fills. The upper 10–50 cm of deposit was a pedogenically unmodified fill probably correlating to the Ford alluvium (Nordt 1992). This level was underlain by a late Holocene, organic A horizon showing an AC-2Ab profile. No cultural materials were observed in the cutbanks or on the surface. Channel erosion and scouring disturbed some portions of the terrace.

Subarea D consisted of two segments of an ancient strath terrace situated west of Stampede Creek. There was a thin residual soil showing an A-R to A-Bt-R profile on this surface. Scattered burned rocks and flakes were noted across the area, and Feature 5, a burned rock mound, was exposed in a tank trail along the eastern margin of the terrace scarp. The mound measured 7 m in diameter, consisted mainly of small burned rocks, and contained a few mussel shell fragments and debitage. Tank traffic had disturbed the mound, and tank tracks were visible on top of the feature. Sheet erosion affected the remainder of Subarea D.

Based on the reconnaissance survey findings, researchers felt that Subareas A, C, and Feature 5 in Subarea D might contain intact cultural deposits and that shovel testing was warranted in these areas. Because there was no deposition in Subarea B, no further work was recommended.

On 28 April 1992, a crew excavated 33 shovel tests. On Subarea A, 18 shovel tests were excavated to a maximum depth of 70 cm. Eleven tests produced 1 biface, 19 flakes, and 53 burned rocks. Although cultural materials were found to 50 cm, 70 percent of the items occurred in the upper 20 cm of deposit. Four of the tests were excavated through features, including one buried burned rock concentration designated as Feature 6. Most tests either encountered bedrock or an argillic horizon between 8 and 36 cm. Fourteen shovel tests were excavated between 10 and 80 cm across Subarea C. One test yielded 7 burned rocks and another contained charcoal at 0–10 cm. One shovel test was excavated on Fea-

ture 5, the burned rock mound, in Subarea D. Burned rocks were found at 10–60 cm, along with charcoal staining at 20–30 cm. The shovel testing results indicated that Subareas A and C, along with Feature 5 in Subarea D, did have potential for discrete archeological deposits. The minimum recommended testing to determine National Register eligibility consisted of 1 to 3 backhoe trenches and 4 to 6 m² of hand-excavated test units in Subarea A, 2 backhoe trenches in Subarea C, and 1 backhoe trench and 2 m² of hand-excavated test units at Feature 5 in Subarea D (Trierweiler, ed. 1994:A1166).

In July and December 1993, Mariah Associates conducted formal testing at 41CV1023, and 2.25 m² was hand excavated (Abbott and Trierweiler, eds. 1995a:532–543). At this time, the site dimensions were changed to 350x125 m (Figure 4-11). On Subarea A, Test Pits 1–4 were placed beside previously identified burned rock features. Although the excavations contained burned rocks or debitage, no evidence of intact features was encountered. Test Pit 5 was situated in the western portion of Subarea A where shovel tests were productive. This unit produced dense stone artifacts, including two Scallorn arrow points, a Marshall dart point, and a burned rock. About 85 percent of the lithic assemblage occurred in the upper 10 cm of fill. The five units ranged in depth from 14 to 50 cm, and most were terminated on a compact, highly rubified soil.

Dense vegetation and steep slopes limited machine access in Subarea C, so Backhoe Trenches 1 and 2 were located just beyond the northern boundary of Subarea C. Both trenches were excavated to 200 cm, and the exposures revealed relatively fine-grained alluvium along the valley margin and coarser sediments in the valley axis. The soils showed weak A-AC-C or AC-C profiles that appeared equivalent to the Ford alluvium (Nordt 1992). No cultural materials were exposed in either trench.

In Subarea D, Test Pits 6 and 7 were situated on opposite sides of Feature 5. Both units were excavated to bedrock at 30 cm. The excavations yielded a high frequency of burned rocks, but Test Pit 7 contained three times more burned rocks (nearly six times by weight) than Test Pit 6. The greatest rock density occurred in the upper 10 cm in both units. A single flake was the only artifact recovered from the mound.

Based on the formal testing results,

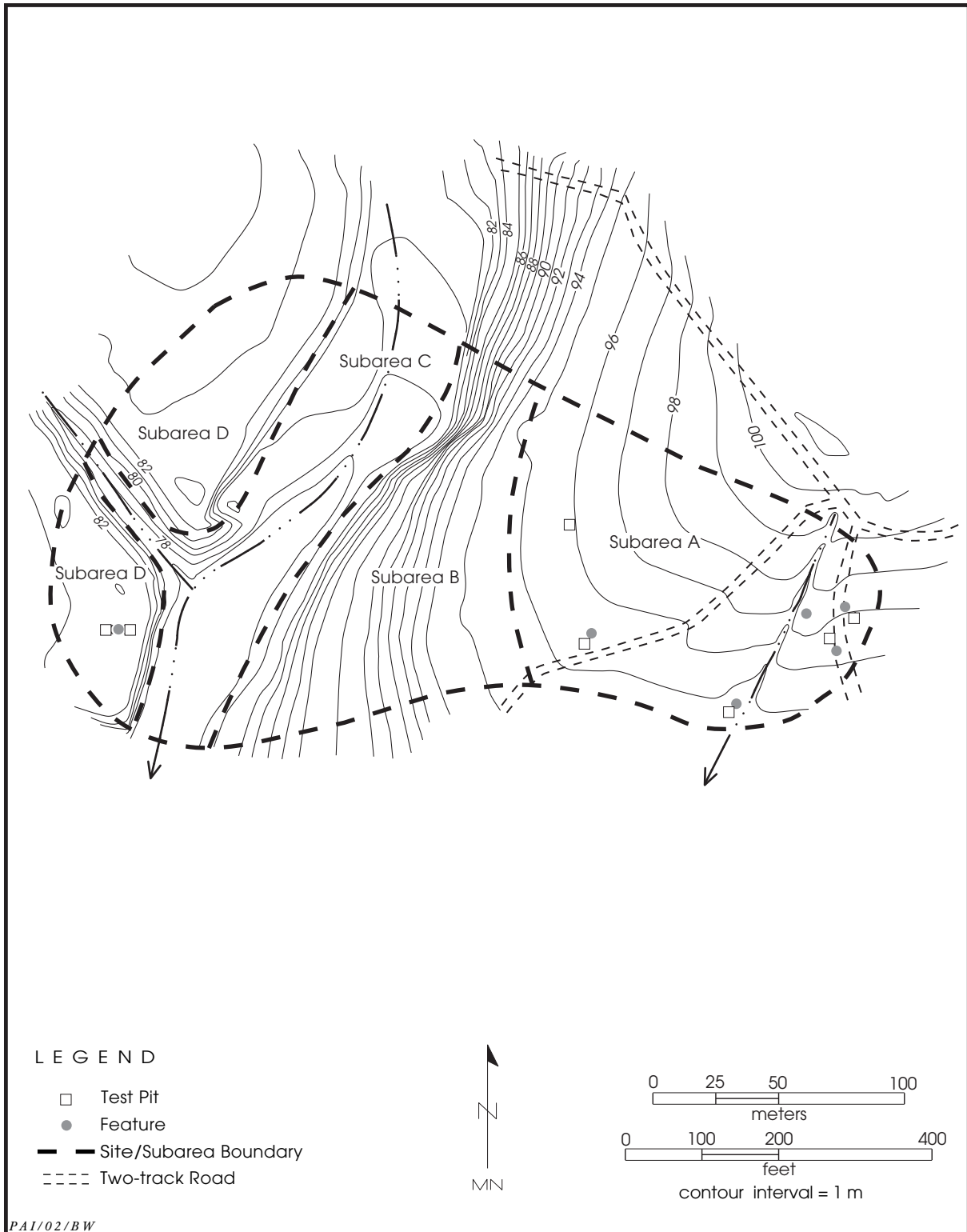


Figure 4-11. Site map of 41CV1023 testing (modified from Abbott and Trierweiler, ed. 1995a:533).

researchers recommended that Subarea A and Subarea D, Feature 5 had potential to address major issues outlined in the Fort Hood research design (Ellis et al. 1994). These subareas were recommended as eligible for listing in the National Register and warranted avoidance and protection. Although no cultural materials were observed in the backhoe trenches excavated near Subarea C, a comprehensive study of the subarea's potential was not conducted because of access problems. The investigators recommended that a more thorough study of Subarea C should be undertaken if there was to be more work at 41CV1023 (Abbott and Trierweiler, eds. 1995a:543).

Work Performed

On 1 February 2002, formal testing of 41CV1023-C was completed, and the topography of Subarea C was mapped in more detail (Figure 4-12). Subarea C was modified slightly to exclude the lower, modern terrace (T_0) averaging less than 50 cm high along the unnamed tributary west of Stampede Creek (compare Figure 4-12 with Subarea C in Figure 4-10). By doing this, Subarea C includes only the T_1 terraces along Stampede Creek, and it encompasses some abandoned channel scars in the north and central portions of the subarea. No cultural materials were exposed on the surface or in any alluvial cutbanks. Mechanical trenching was not undertaken because most of the valley was inaccessible by backhoe.

An unrecorded rockshelter containing Holocene sediments was discovered along the northeast margin of Subarea C. The west-facing rockshelter was designated as Subarea E and had maximum dimensions of 37x5x1.2 m (Figure 4-13). A substantial portion of the shelter was collapsed, and large roof fall boulders (breakdown) covered 80 percent of the floor. A bedrock shelf protruded from the back wall at the north end of the rockshelter, and a few seeps were visible in this area. No cultural materials were exposed on the shelter floor. There was a shallow gully just west of the shelter, and vegetation consisted of one juniper tree and greenbriar. Drip line erosion was the only observed disturbance to the shelter deposits. Formal testing was conducted at 41CV1023-E on 25–28 January 2002 because it had the potential to contain intact archeological deposits.

To avoid confusion, the numbering sequences used for the 1993 manual excavations (Test Pits 1 through 7) and features (1 through 6) were not repeated. A total of 5.88 m³ was removed from six test units (Test Units 8–13) excavated on Subareas C and E (Table 4-13). Dense gravels or bedrock were encountered at the base of each unit. Two more features (Features 7 and 8) were documented.

Definition of Analysis Units

Subareas C and E of 41CV1023 are distinguished by their different geographic settings. Test excavations revealed that only one analysis unit could be defined in each subarea.

41CV1023-C

Site Extent and Depth

Bordered on all sides by the erosional slopes of Stampede Creek valley, the discontinuous T_1 surface comprising 41CV1023-C has maximum dimensions of 310 m northeast-southwest by 70 m northwest-southeast, covering an area of 21,700 m². Although the alluvial sediments are up to 140 cm thick, no intact cultural deposits were encountered in the excavations.

Excavation Results

Deposits beneath the T_1 surface consist of Ford alluvium containing a buried soil formed on fine-grained sediments with variable amounts of gravels and distinct gravel stringers (see Appendix B). A recent layer of unconsolidated sand caps the buried soil, particularly on the terrace sections between present and abandoned channels of Stampede Creek.

Sixteen (29.6 percent) of 54 levels excavated from five test units produced sparse cultural materials (Table 4-14). Debitage and burned rocks occurred in the buried soil and deeper, gravelly sediments, and 15 bone fragments were recovered from a stringer of fine gravels. Most of the faunal remains consisted of spirally fractured bones of canid- to deer-sized mammals (see Appendix C). Two units also contained recent items in the upper 20 cm of fill.

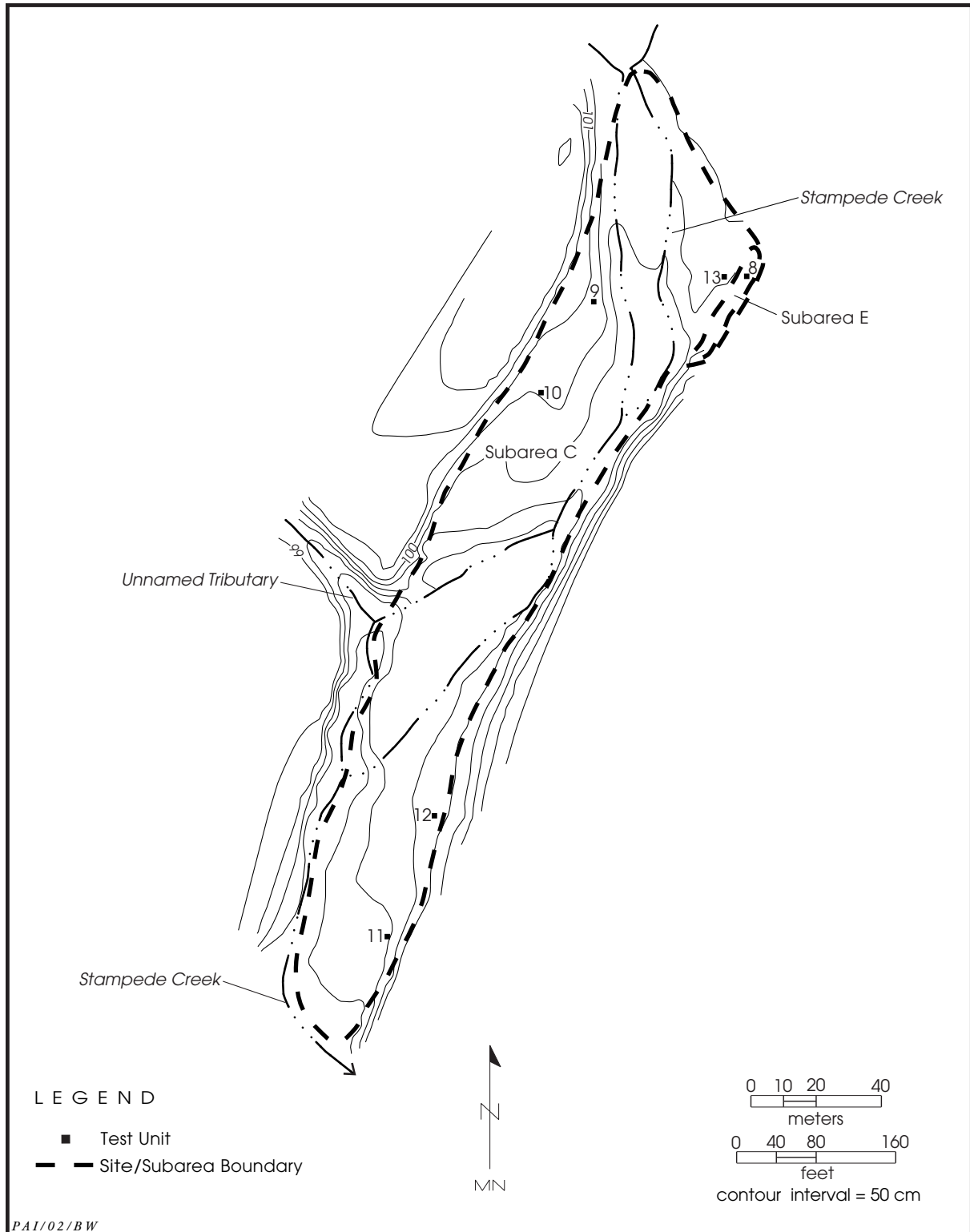


Figure 4-12. Map of Subareas C and E, 41CV1023.

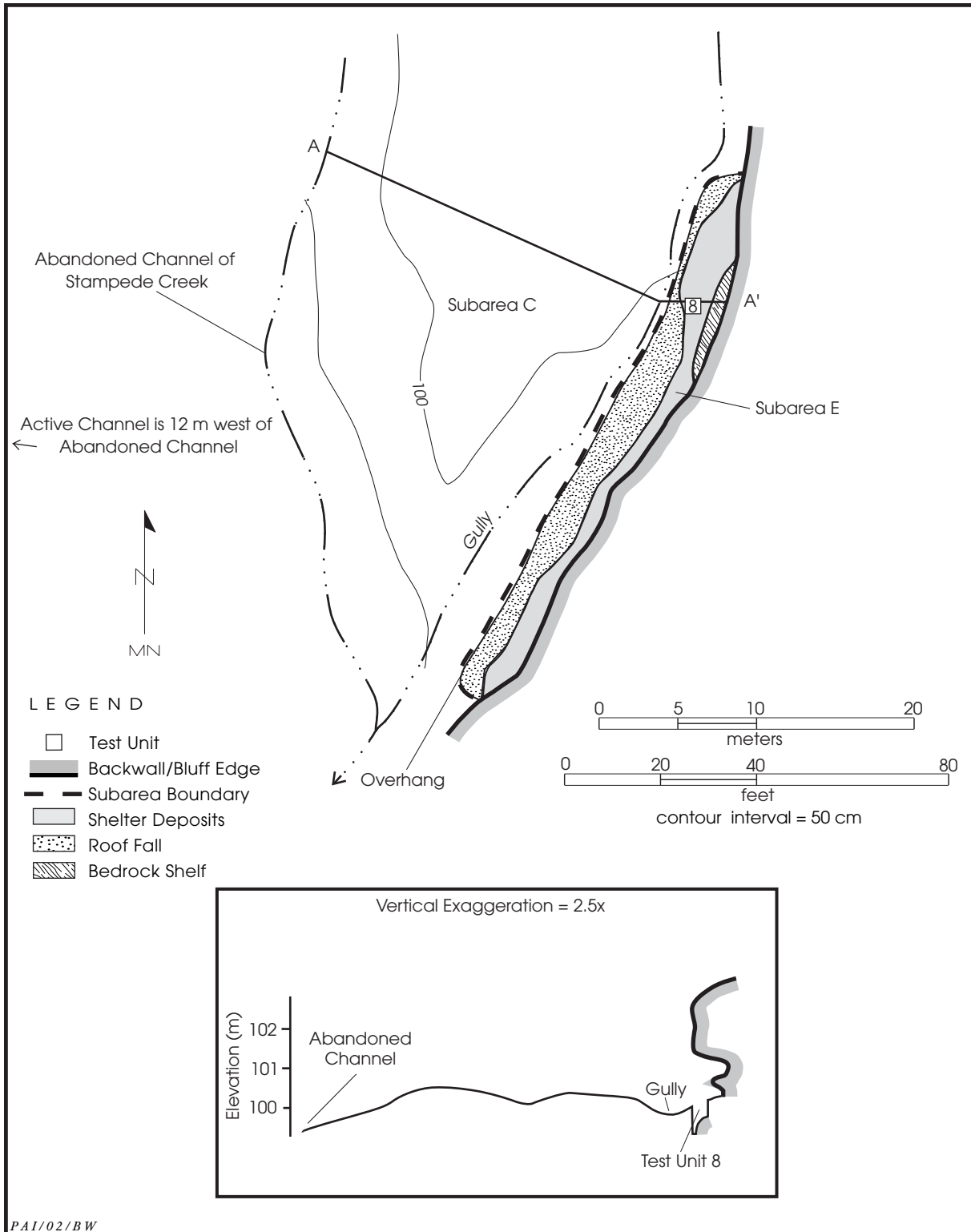


Figure 4-13. Plan and profile of 41CV1023-E.

Table 4-13. Test unit summary, 41CV1023

Subarea	Test Unit	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
C	9	1.0 x 1.0 m	surface	100 cm	1.00	—
	10	1.0 x 1.0 m	surface	120 cm	1.20	—
	11	1.0 x 1.0 m	surface	80 cm	0.80	—
	12	1.0 x 1.0 m	surface	100 cm	0.93	—
	13	1.0 x 1.0 m	surface	140 cm	1.40	—
E	8	1.0 x 1.0 m	surface	80 cm	0.55	Feature 7 at 28–38 cm; Feature 8 at 38–42 cm

Discussion

Because there are so few cultural materials scattered throughout the buried soil, no distinct archeological components could be identified with any degree of confidence. The burned rocks and bone fragments mixed with gravelly channel deposits and gravel stringers also signify a high-energy depositional environment and poor contextual integrity.

41CV1023-E

Site Extent and Depth

The rockshelter measures 37x5x1.2 m (approximately 185 m²) and contained two shallowly buried discrete features with associated artifacts. The cultural remains are concentrated in the upper 50 cm, and shelter deposits appear to be no more than 70 to 80 cm thick. No evidence of looting was observed.

Excavation Results

The deposits in Test Unit 8 were identified as Ford alluvium with a thin (about 5 cm) veneer of recent deposits (see Appendix B). Although they occur underneath a rock ledge and 41CV1023-E is classified as a rockshelter, the sediments are definitely alluvium deposited by Stampede Creek. This rockshelter is unique in this manner because its deposits do not match any of the typical rockshelter fills Abbott defined (1995b).

Two features and sparse cultural materials were encountered in the excavation (Table 4-15). Feature 7, a discrete soil stain, was present along the east wall from 28 to 38 cm. The charcoal-flecked stain consisted of several different-colored matrices that yielded nine flakes and five

small angular and tabular burned rocks (0.5 kg). Charcoal collected at 31 cm yielded a conventional radiocarbon age of 530 ± 40 B.P. (Beta-167180; see Appendix A). The feature fill contained oak wood (see Appendix D). The excavated portion of the feature measured 100 cm north-south by 40 cm east-west. Its western edge was well-defined, but the stain extended in all other directions beyond the limits of the excavation. Based on the feature's morphology and the distance between the feature and the shelter's back wall, the complete stain may have maximum dimensions of 140x115 cm. No basin shape was apparent, and its function is unknown. Limestone spalls and small roots have disturbed Feature 7 minimally.

Feature 8 is a burned rock concentration encountered along the south wall at 38–42 cm. The feature comprised a single, flat layer of 10 angular and tabular burned rocks (1.5 kg) less than 10 cm in size. Charred plant remains consisted of oak wood and pecan shell fragments. The exposed portion of the feature measured 41 cm east-west by 28 cm north-south, but its overall size is unknown because it continued south beyond the test unit. A large limestone boulder (subsequently removed) and smaller spalls that capped the western edge of the concentration were the only observed disturbances. The function of this feature is unclear.

Most of the cultural materials in Test Unit 8 were found in the matrix surrounding and just below the features. These remains include one modified, triangular piece of mussel shell that may have been used as a scraper. The ventral margin is extremely smooth and worn, and the opposite lateral edge was smoothed after being cut or broken. Weathered bedrock sloped across the east half of the unit from 37–50 cm and was present to a maximum depth of 80 cm.

Table 4-14. Summary of cultural materials from 41CV1023-C

Provenience	Debitage	Unmodified Bones	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 9				
Level 1 (0–10 cm)*	—	—	—	—
Level 2 (10–20 cm)	—	—	—	—
Level 3 (20–30 cm)	—	—	4	0.10
Level 4 (30–40 cm)	—	—	2	0.10
Level 5 (40–50 cm)	—	—	3	0.10
Level 6 (50–60 cm)	1	—	7	0.25
Level 7 (60–70 cm)	1	—	6	0.25
Levels 8–10 (70–100 cm)	—	—	—	—
Subtotal	2	—	22	0.80
Test Unit 10				
Levels 1–2 (0–20 cm)	—	—	—	—
Level 3 (20–30 cm)	—	—	4	0.25
Level 4 (30–40 cm)	2	—	—	—
Level 5 (40–50 cm)	—	—	2	0.10
Level 6 (50–60 cm)	1	—	1	0.05
Level 7 (60–70 cm)	—	—	1	0.05
Levels 8–12 (70–120 cm)	—	—	—	—
Subtotal	3	—	8	0.45
Test Unit 11				
Levels 1–4 (0–40 cm)	—	—	—	—
Level 5 (40–50 cm)	—	—	5	0.30
Level 6 (50–60 cm)	—	—	5	3.00
Level 7 (60–70 cm)	—	—	4	1.00
Level 8 (70–80 cm)	—	—	4	1.00
Subtotal	—	—	18	5.30
Test Unit 12				
Levels 1–9 (0–90 cm)	—	—	—	—
Level 10 (90–100 cm)	—	—	4	0.50
Subtotal	—	—	4	0.50
Test Unit 13				
Levels 1–2 (0–20 cm)*	—	—	—	—
Levels 3–10 (20–100 cm)	—	—	—	—
Level 11 (100–110 cm)	—	15	—	—
Levels 12–14 (110–140 cm)	—	—	—	—
Subtotal	—	15	—	—
Total	5	15	52	7.05

* contains recent items

Discussion

The testing results reveal the presence of intact cultural deposits in the upper 50 cm of

shelter fill. A calibrated radiocarbon date (2-sigma range) of A.D. 1320–1440 for Feature 7 indicates a Late Prehistoric period, Toyah-phase occupation. There is a second undated feature (Feature 8) at a slightly lower depth, but the relative age and thinness of the sediments suggest the features are roughly contemporaneous. More intact archeological remains are probably present because most of the deposits are preserved under massive roof fall boulders.

Summary and Conclusions

The alluvial deposits that make up 41CV1023-C (terrace) did not yield spatially discrete cultural remains and have limited archeological research potential, so 41CV1023-C is recommended as not eligible for listing in the National Register. Analysis Unit 2, however, contains a thin, isolable cultural component buried in a comparatively pristine rockshelter. Based on this finding, 41CV1023-E is recommended as eligible for listing in the National Register.

41CV1182

Site Setting

Site 41CV1182 is situated around the head of an unnamed tributary of Browns Creek near the northeastern margin of Manning Mountain. The site subsumes a portion of the upland (Manning)

Table 4-15. Summary of cultural materials from 41CV1023-E

Provenience	Debitage	Modified mussel shell	Artifact Totals	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 8					
Level 1 (0–10 cm)	—	—	—	—	—
Level 2 (10–20 cm)	—	—	—	2	0.10
Level 3 (20–30 cm)	—	—	—	—	—
Feature 7 (28–38 cm)	9	—	9	5	0.50
Feature 8 (38–42 cm)	—	—	—	10	1.50
Level 4 (30–40 cm)	2	1	3	9	1.00
Level 5 (40–50 cm)	1	—	1	7	1.00
Level 6 (50–60 cm)	1	—	1	1	0.25
Level 7 (60–70 cm)	—	—	—	4	0.25
Level 8 (70–80 cm)	—	—	—	—	—
Total	13	1	14	38	4.60

surface and a deeply incised canyon that varies from narrow at its head to nearly 300 m wide at the east end of the site. The canyon contains rockshelters, steeply sloping valley walls, and various alluvial terrace surfaces. The vegetation on the Manning surface consists mainly of an oak-juniper woodland and grasses, and the canyon supports a dense riparian forest and understory. Site elevation is 300–330 m above mean sea level.

Previous Work

In April, May, and July 1986, Texas A&M University recorded the site (site form on file, Cultural Resources Management Office, Fort Hood). Separate trinomial numbers 41CV1182 and 41CV1264 were assigned to overlapping prehistoric and historic areas. Although the form noted the maximum site dimensions as 385x365 m, the sketch map depicted its size as 525x380 m (Figure 4-14). Site 41CV1182 consisted of a looted burned rock mound or midden, sterile overhangs, and burned rock and lithic scatters. Stone tools—including dart points,debitage, bones, burned rocks, and possibly worked quartz—were observed. Three untyped dart points, a unifacial scraper, and bifaces were collected. The deposits over most of the site were comprised of a stony clay esti-

mated to be less than 10 cm thick. Vehicle damage, looting, and cattle had disturbed an estimated 60 percent of the site. Immediate protection of the burned rock feature by burial was recommended (Field No. 1705 in Koch and Mueller-Wille [1989b:130–131]).

Although a few flakes were observed in an erosional channel along the back wall of a rockshelter, this portion of the site was designated 41CV1264 because of the preponderance of historic petroglyphs (site form on file, Cultural Resources Management Office, Fort Hood). Situated at the head of a drainage, the rockshelter had maximum dimensions of 35x25x15 m. Most of the original floor was covered by large roof fall boulders, indicating severe collapses of the overhang. Almost all of the petroglyphs were inscribed on the boulders. Motifs including names, dates, geometric designs, numbers and other images were noted. The earliest date was “born 1849,” and the graffiti continued to the present. Roof collapse, erosion, and vandalism (several hatched lines and use of a rock saw in attempts to remove glyphs) affected 65 percent of the rockshelter. Goat feces up to 5 cm thick covered some of the boulders, and weathering and lichen growth were noted as natural disturbances. No historic artifacts were observed, and none of the petroglyphs appeared to be prehistoric (Field No. 1829 in

Koch and Mueller-Wille [1989b:99–100]). Dr. Fred Briuer (Fort Hood archeologist) and a camera crew from cable Channel 10 (Waco) visited the site 22 May 1986.

Work Performed

Prewitt and Associates surveyed and reassessed 41CV1182 on 27 December 2001. Based on the potential for intact prehistoric cultural deposits, the site was divided into Subareas A–D (Figure 4-15). The site area as depicted on the

1986 sketch map remained unchanged, with maximum dimensions of 525 m east-west by 380 m north-south, covering an area of approximately 199,500 m².

Subarea A consisted of the large, mostly collapsed, generally north-facing rockshelter (also designated as historic site 41CV1264) located at the headwaters of an unnamed tributary of Browns Creek. All of the visible petroglyphs in the rockshelter were recorded and are reported separately as historic site 41CV1264 (forms on file, Cultural Resources Management Office, Fort

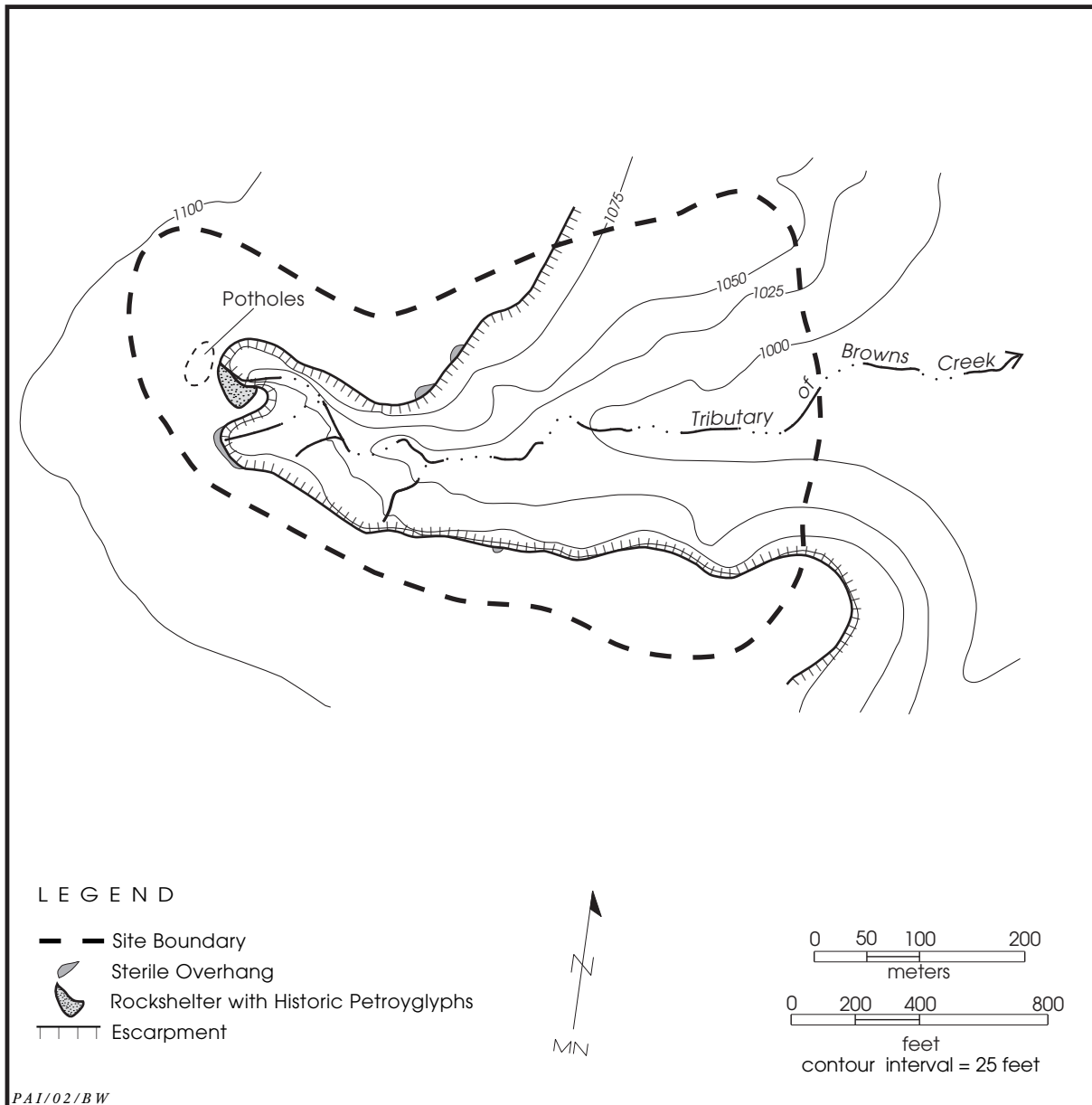


Figure 4-14. Site sketch map of 41CV1182 (modified from 1986 site form sketch map).

Hood). The rockshelter has maximum dimensions of 38.5x22.0x15.0 m (Figure 4-16). The shelter floor, ranging from 0.50 to 5.25 m wide, was exposed only along the back wall because of the massive amount of roof fall debris. An erosional channel and seeps have flushed out the fine sediment deposits, leaving a 0.5–1.5 m wide strip of exposed bedrock by the back wall. Portions of the floor were littered with smaller roof spalls, and bare bedrock was exposed in some areas. Boulders exhibiting different stages of weathering and piled on top of one another indicated many episodes of roof fall and brow retreat. Deep fissures visible in the rocks along the back of the overhang outlined blocks of limestone primed for future collapse. Observed disturbances included historic and modern petroglyphs, animals (particularly goats), erosion, scouring, and roof collapse. Isolated oak, juniper, and cedar elm trees, as well as grapevine and greenbriar, grew among the large boulders toward the front of the shelter.

Comprising approximately 70 percent of the site, Subarea B subsumed four distinct landforms—the upland (Manning) surface, the canyon rim containing three previously recorded “sterile” overhangs, the steep canyon slopes, and a high T_2 surface. These surfaces were combined under Subarea B because these settings, in and of themselves, have extremely limited, if any, potential to contain intact subsurface cultural deposits. Thin patches of residual soil and exposed limestone were visible across the upland. Stone tools, debitage, and burned rocks, as well as natural chert cobbles and nodules, were strewn across this surface. The looted burned rock mound or midden recorded in 1986 was re-located and designated Feature 2. It was situated along the escarpment rim, 20–25 m north-northwest of the Subarea A (see Figures 4.14 and 4.15). Three looters’ holes, each less than 25 cm deep, were observed. Burned and unburned rocks, lithic artifacts, and mussel shells were exposed on the spoil piles. None of the looting appeared to be recent, and the exposures suggested the feature measured 15 m north-south by 10 m east-west. Several cut juniper trees had been laid across the feature. The upland supported an oak-juniper woodland and grasses and was disturbed by military vehicle maneuvers, clearing, and erosion.

Three of four overhangs marked as “sterile”

on the 1986 site sketch map were re-located and found not to contain any sediment. The fourth overhang did contain deposits and was designated Subarea D (see below).

The canyon walls were moderate to very steeply sloping and highly erosional. The upper margins of the valley and its side drainages were deeply incised, but the valley widened out further downstream. An occasional displaced artifact was observed on the slopes, and the vegetation consisted of a dense mixed riparian forest.

The T_2 rose about 2.5 m above the present channel and appears as discontinuous segments both along the valley wall and beside the tributary. It was dominated by gravelly, Pleistocene-aged sediments (see Appendix B). No cultural materials were noted, but dense vegetation cover rendered surface visibility poor. One shovel test excavated on this terrace was devoid of cultural materials and encountered dense gravels at 25 cm. Juniper clearing and erosion disturbed the terrace surface.

Subarea C consisted of the many wedges of the T_1 and T_0 along opposite banks of the unnamed tributary of Browns Creek (see Figure 4-15). These surfaces were not preserved along the side drainages situated in the upper reaches of the canyon. There was a dense riparian woodland and understory on the terraces, and there was no surface visibility. The tributary cutbank generally afforded good exposures, and a basin-shaped hearth (designated as Feature 1) was buried at ca. 60 cm below surface in the south bank of T_1 .

An overhang Texas A&M University recorded as sterile in 1986 (site form on file, Cultural Resources Management Office, Fort Hood) is actually a collapsed rockshelter containing some deposition. This rockshelter, designated Subarea D, is situated at the headwaters of a side drainage and 50–60 m south of Subarea A. Most of the rockshelter faces east, but the opening bends at its south-southeastern margin, and part of it faces north (Figure 4-17). It has maximum dimensions of 24.0x5.0x1.65 m. A strip of bare limestone, 50 to 100 cm wide, is exposed along the back wall. The shelter floor is generally strewn with roof fall boulders and spalls. Large boulders from the collapsed overhang extend all the way to and across an ephemeral drainage. A few isolated hardwood trees are located at the ends and in front of the rockshelter.

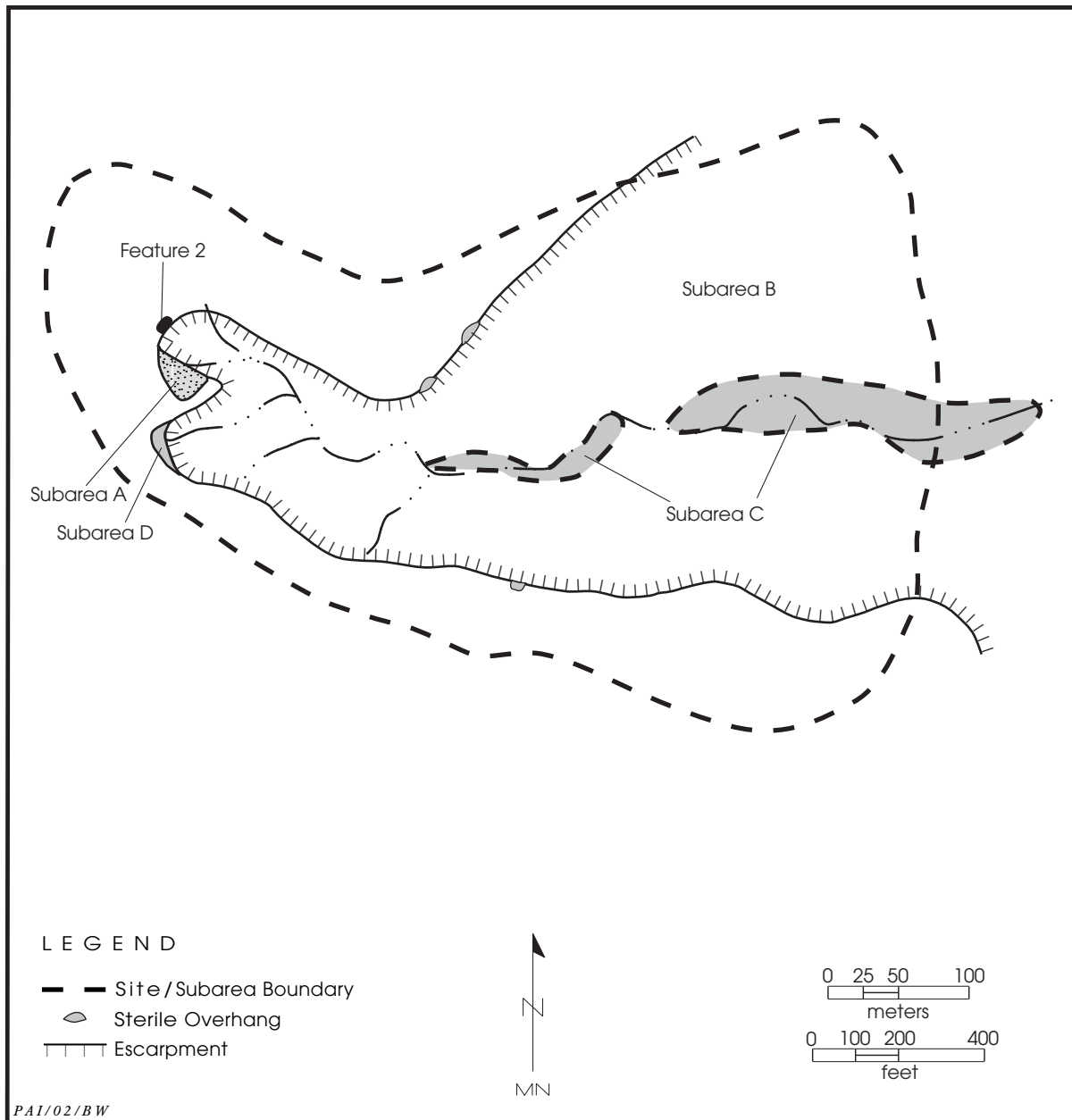


Figure 4-15. Site sketch map of Subareas A–D, 41CV1182 (modified from 1986 site form sketch map).

Disturbances to the shelter deposits include erosion, scouring, and roof collapse.

Between 8 January and 13 February 2002, formal testing was conducted in Subareas A–D because there were Holocene-aged sediments present and there was potential for intact archeological deposits. In Subarea B, testing was restricted to Feature 2 because this was the only portion of the subarea with any archeological research potential. No backhoe trenches were excavated because the entire area is

situated within endangered bird habitat and is inaccessible by backhoe. A total of 4.45 m³ was hand excavated from seven test units (Table 4-16). In all cases, the excavations were halted on bedrock, immovable boulders, or dense gravels.

Definition of Analysis Units

Subareas A, B, C, and D are defined by their geomorphic differences, and each subarea is

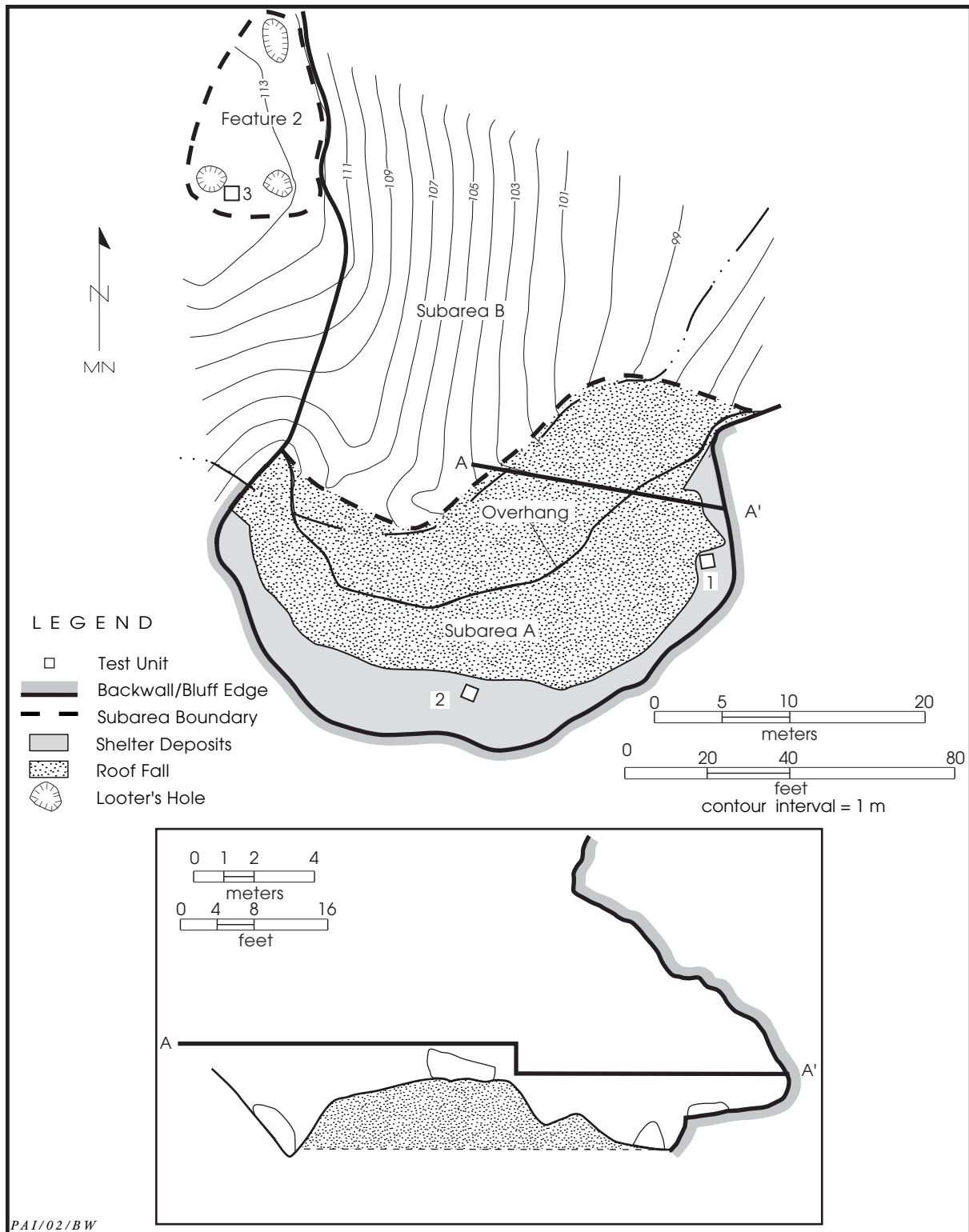


Figure 4-16. Plan map of 41CV1182-A and Feature 2 in 41CV1182-B and profile of 41CV1182-A.

discussed below. Each subarea is treated as a single analysis unit.

41CV1182-A

Site Extent and Depth

The site is confined to the rockshelter, measuring 38.5x22.0 m, or approximately 847 m². The relatively thin sediments did not yield intact cultural deposits.

Excavation Results

In Test Units 1 and 2, the unaltered sediments are similar, consisting of internally and externally derived silty clay and clay loams containing 25–50 percent limestone fragments ranging from granule- to boulder-sized. These deposits correspond to Abbott's (1995b) Type 1 and 3 sediments. Five of nine levels excavated from Test Units 1 and 2 contained sparse debitage and bone fragments, particularly in the upper 20 cm of deposits (Table 4-17). A cottontail rabbit humerus and tibia, along with two vertebrate long bone fragments, are spirally fractured. The rabbit elements were noted as "greasy" and possibly recent (see Appendix C). Bedrock, sloping from east to west, was present between 25 and 52 cm across Test Unit 1. The excavation of Test Unit 2 was stopped at 16–40 cm when a large boulder was excavated.

Discussion

Isolable cultural components cannot be distinguished because cultural materials are so scarce, including some probably modern faunal remains. The collapsed rockshelter also shows evidence of severe erosion and scouring. The extremely moist conditions prevalent in the shelter are not conducive to preserving archeological materials.

41CV1182-B, Feature 2

Site Extent and Depth

Stone artifacts and burned rocks that were visible on the upland surface and exposed by looting define the limits of Feature 2. The burned rock feature measures 15x10 m, covering ap-

proximately 150 m². Looters' holes and one test unit reveal that the feature was 25 to 30 cm thick.

Excavation Results

Test Unit 3 was placed in Feature 2. Level 1 produced prehistoric and modern materials, but no feature deposits were observed (Table 4-18). Feature 2 was encountered at 10–40 cm and contained dense cultural materials dominated by stone artifacts. There were also pieces of glass in the upper 10 cm of the feature fill. All of the faunal remains consisted of canid- to deer-sized mammals and deer-pronghorn, and most exhibited burning and spiral fractures. Most burned rocks were angular and tabular pieces less than 15 cm in size. Roots occurred throughout the fill, and there were no apparent internal features. A soil color change from a dark gray brown to a reddish brown clay loam occurred at 30 cm. One flake was found below the feature at 40–50 cm.

Discussion

Feature 2 on 41CV1182-B consists of a thin, deflated, and disturbed burned rock feature with little potential to isolate discrete internal cultural components. Elam and Montell dart points from the feature and Bonham arrow points found above the feature suggest the area was used during the Late Archaic and Late Prehistoric (Austin phase) periods.

41CV1182-C

Site Extent and Depth

Subarea C of 41CV1182 comprises discontinuous, well-defined terrace remnants (T₁ and T₀) that extend for approximately 500 m along a tributary and are up to 40 m wide (Figure 4-18). But test units excavated on a portion of the T₁ near the eastern site margin encountered a spatially discrete occupation between 60 and 80 cm.

Excavation Results

Contiguous Test Units 4 and 5 revealed about 1 m of upward fining, late Holocene alluvium. There were sparse cultural materials in the upper 60–70 cm of deposits. Feature 1 is a

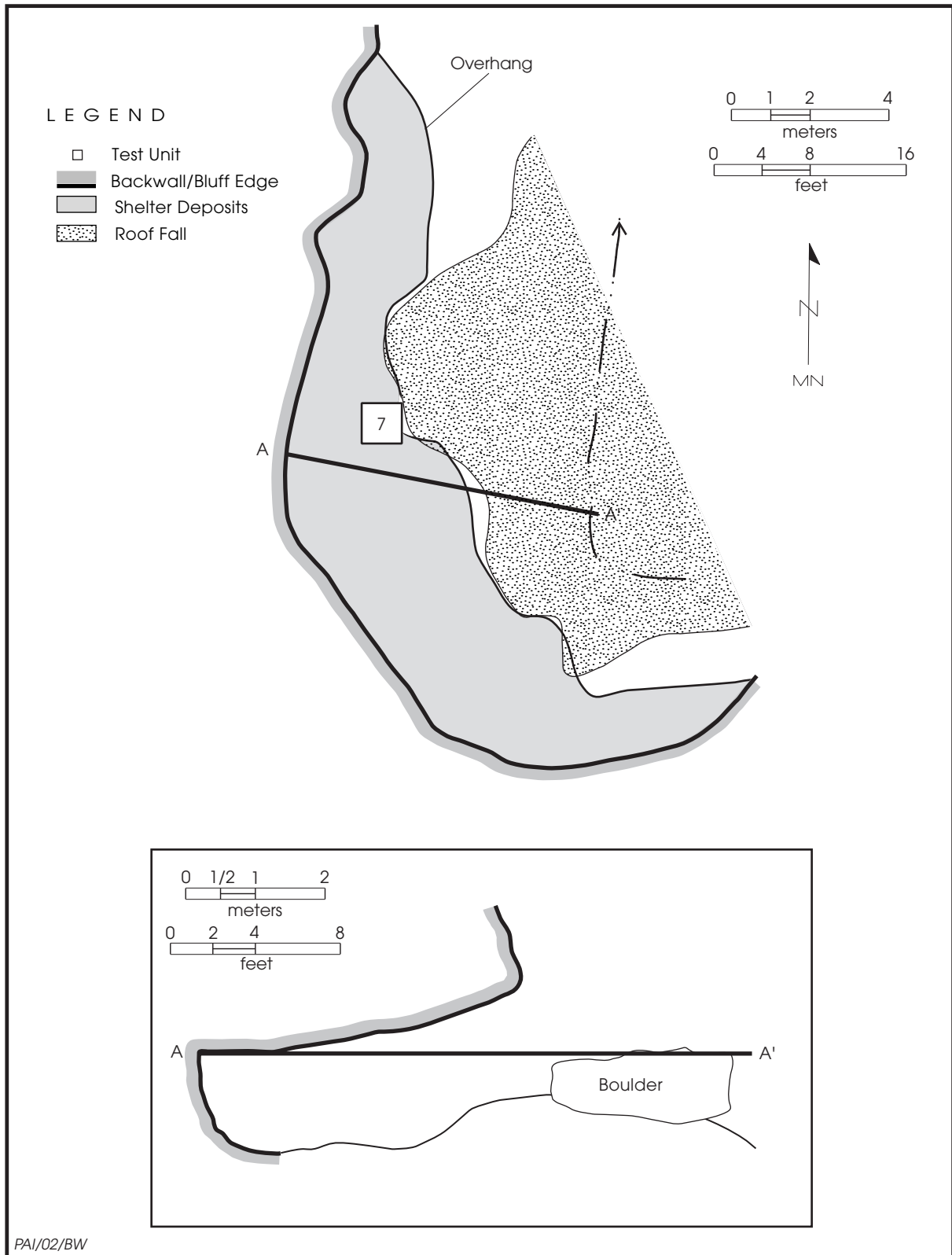


Figure 4-17. Plan and profile of 41CV1182-D.

Table 4-16. Test unit summary, 41CV1182

Subarea	Test Unit	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
A	1	1.0 x .05 m	surface	52 cm	0.15	–
	2	1.0 x 1.0 m	surface	40 cm	0.35	–
B	3	1.0 x 1.0 m	surface	40 cm	0.40	Feature 2 at 10–40 cm
		0.5 x 0.5 m	40 cm	50 cm	0.25	–
C	4	1.0 x 1.0 m	surface	90 cm	0.90	Feature 1 at 64–96 cm
	5	1.0 x 1.0 m	surface	90 cm	0.90	Feature 1 at 64–96 cm
	6	1.0 x 1.0 m	surface	90 cm	0.90	–
D	7	1.0 x 1.0 m	surface	90 cm	0.90	–

basin-shaped hearth from 64 to 96 cm (Table 4-19). The feature was mostly confined to the northern half of Test Unit 4, and the excavated portion measured 139 cm east-west by 78 cm north-south (Figures 4-19 and 4-20). Its overall size cannot be estimated because cutbank erosion has removed terrace deposits. The feature consisted of three to four layers of burned rocks ($n = 280$, 86 kg), but only 5 percent of the limestone was fossiliferous.

Most rocks were tabular or blocky, angular pieces less than 15 cm in size, and the rest were made up of larger slabs. The lower half of the hearth intruded into a very gravelly BC horizon. Cultural materials were most abundant in the feature fill and the surrounding matrix. The only diagnostic bone consists of a deer or pronghorn tibia fragment. Oak wood charcoal collected at 83 cm yielded a conventional radiocarbon age of 1270 ± 60 B.P. (Beta-167181; see

Appendix A). Almost 97 percent of the total weight of the charred wood from the flotation and macroplant samples was composed of oak wood, followed by walnut and willow family woods (see Appendix D). Small roots and cutbank erosion were the only observed disturbances.

Five of nine levels excavated from Test Unit 6 yielded debitage or burned rocks, with most of the materials occurring at approximately the same depth as Feature 1.

Discussion

A basin-shaped hearth and lens of cultural materials confirms the presence of a laterally extensive and vertically discrete prehistoric occupation. Based on the testing results, this component measures at least 15 m east-west by 10 m north-south, covering about 150 m². Although the maximum thickness of the feature is 32 cm, its associated living surface averages 20 cm thick. A calibrated radiocarbon date (2-sigma range) of A.D. 650–890 for the hearth identifies this as a transitional Late Archaic into Late Prehistoric.

41CV1182-D

Site Extent and Depth

With maximum dimensions of 24x5 m, the rockshelter covers approximately 120 m². No isolable cultural deposits were encountered.

Excavation Results

The nine levels excavated from Test Unit 7 produced one biface and four small burned rocks

Table 4-17. Summary of cultural materials from Analysis Unit 1, 41CV1182-A

Provenience	Debitage	Unmodified Bones
Test Unit 1		
Level 1 (0–10 cm)	1	–
Level 2 (10–20 cm)	3	1
Levels 3–4 (20–40 cm)	–	–
40–52 cm	–	–
Subtotal	4	1
Test Unit 2		
Level 1 (0–10 cm)	2	1
Level 2 (10–20 cm)	2	4
Level 3 (20–30 cm)	–	–
Level 4 (30–40 cm)	3	–
Subtotal	7	5
Total	11	6

Table 4-18. Summary of cultural materials from 41CV1182-B

	Bonham Arrow Points	Untypeable Arrow Points	Arrow Point Preform	Elam Dart Point	Montell Dart Point	Bifaces	Miscellaneous Unifaces	Graver	Core Tools	Edge-modified Flakes	Cores	Tested Cobble	Debitage	Artifact Totals	Unmodified Bones	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 3																	
Level 1 (0–10 cm)*	2	1	1	–	–	3	2	1	1	7	2	1	401	422	–	24	2.50
Feature 2 (10–20 cm)*	–	–	–	–	–	1	2	–	1	1	–	–	469	474	16	60	10.50
Feature 2 (20–30 cm)	–	–	–	1	1	1	1	–	–	–	–	–	259	263	–	51	9.50
Feature 2 (30–40 cm)	–	–	–	–	–	2	–	–	–	–	–	–	65	67	9	63	9.00
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–
Total	2	1	1	1	1	7	5	1	2	8	2	1	1,195	1,227	25	198	31.50

*contains recent items

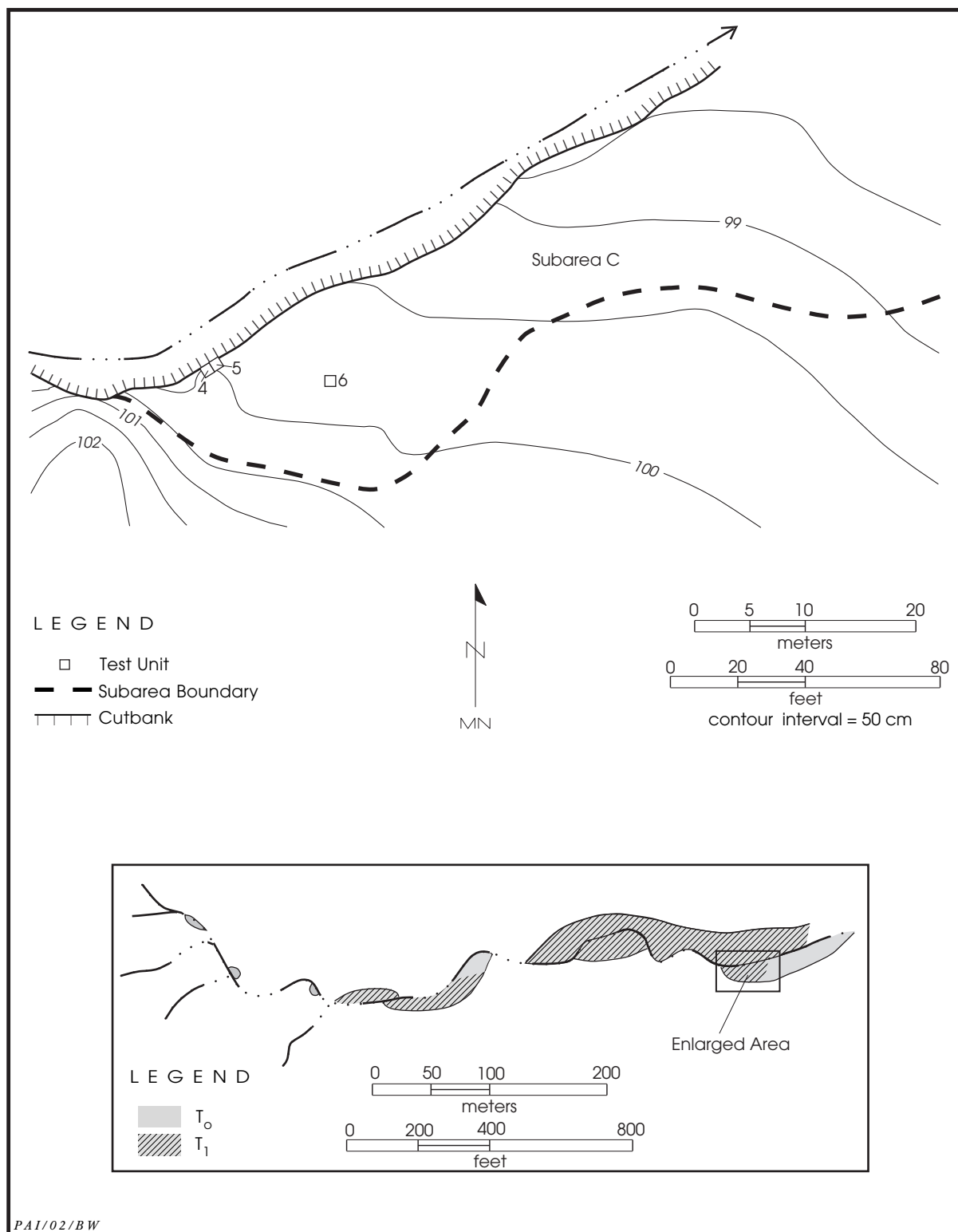


Figure 4-18. Sketch map of geomorphic surfaces and detailed map of test unit locations, 41CV1182-C.

Table 4-19. Summary of cultural materials from 41CV1182-C

Provenience	Miscellaneous Uniface	Core Tools	Edge-modified Fakes	Debitage	Artifact Totals	Unmodified Bones	Unmodified Mussel Shell	Burned Rock Counts	Burned Rock Weights (kg)
Test Units 4 and 5									
Level 1 (0–10 cm)	–	–	–	–	–	–	–	–	–
Level 2 (10–20 cm)	–	–	–	5	5	–	–	3	0.45
Level 3 (20–30 cm)	–	1	–	6	7	–	–	2	0.40
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	–
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–
Level 6 (50–60 cm)	–	–	–	3	3	–	–	24	4.50
Level 7 (60–70 cm)	–	–	1	7	8	–	–	19	4.00
Feature 1 (64–96 cm)	1	1	–	63	65	1	1	280	86.00
Level 8 (70–80 cm)	–	1	1	25	27	4	–	73	17.50
Level 9 (80–90 cm)	–	–	–	3	3	–	–	13	1.50
Subtotal	1	3	2	112	118	5	1	414	114.35
Test Unit 6									
Levels 1–3 (0–30 cm)	–	–	–	–	–	–	–	–	–
Level 4 (30–40 cm)	–	–	–	–	–	–	–	1	0.10
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–
Level 6 (50–60 cm)	–	–	–	–	–	–	–	3	0.10
Level 7 (60–70 cm)	–	–	–	–	–	–	–	3	0.20
Level 8 (70–80 cm)	–	–	–	3	–	–	–	3	0.10
Level 9 (80–90 cm)	–	–	–	–	–	–	–	1	0.10
Subtotal	–	–	–	3	3	–	–	11	0.60
Total	1	3	2	115	121	5	1	425	114.95

(0.2 kg) at 30–60 cm. There was also charcoal at 40–80 cm, but some pieces appeared to be partially burned, representing recent disturbance. Between 56 and 71 cm, approximately two-thirds of the unit was composed of immovable limestone spalls. The sediments consist of dark gray brown and dark brown clay loams containing common limestone fragments. They correspond to Type 3 shelter fill Abbott (1995b) defined and represent sediments that were washed in from outside. The matrix became wetter with depth, particularly between 40 and 90 cm.

Discussion

Discrete archeological components cannot be identified based on the minute amounts of cultural materials. In addition, severe ero-

sional disturbances and the continual wetting and drying of shelter deposits do not lend themselves to preserving intact cultural deposits.

Summary and Conclusions

Sites 41CV1182-A, 41CV1182-B, and 41CV1182-D and all three subareas contain no spatially discrete cultural deposits and thus are found to have limited archeological research potential. They are recommended as not eligible for listing in the National Register of Historic Places. Site 41CV1182-C, however, consists of a thin, well-defined cultural component buried in a fine-grained alluvium. This is subarea therefore recommended as eligible for listing in the National Register.

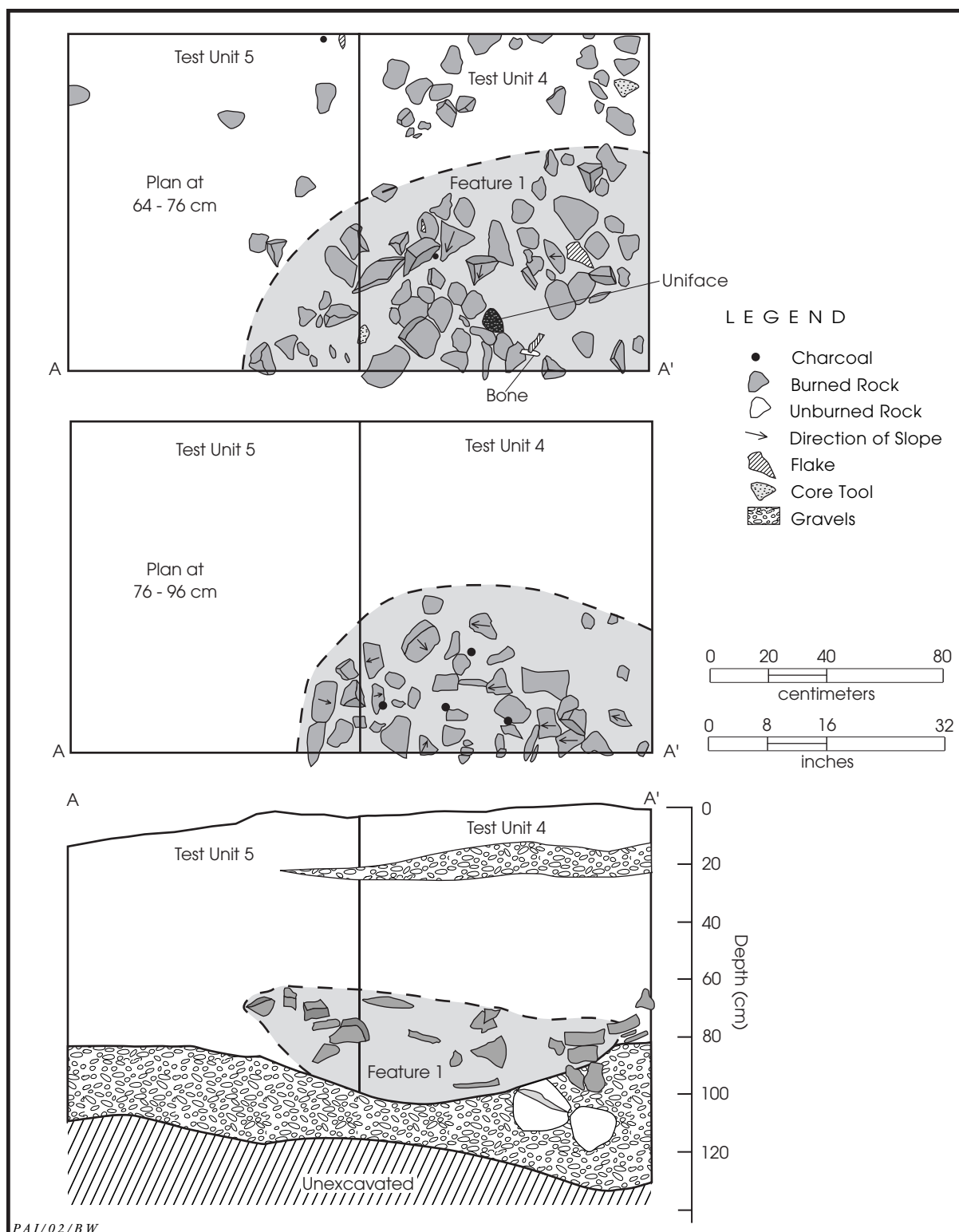


Figure 4-19. Plans and profile of Feature 1, 41CV1182-C.



Figure 4-20. Photograph of Feature 1, 41CV1182-C. View is south of burned rocks exposed at ca. 70 cm and in profile.

41CV1415

Site Setting

This open campsite site—41CV1415—is situated on a west-facing slope underlain by the Paluxy Formation. The Walnut Clay (Killeen surface) and Glen Rose limestones delimit the eastern and western site margins, respectively, while Shell Mountain Road marks the southern site boundary. The Paluxy sands are thicker on the south and thin considerably to the north. Most of the juniper trees have been mechanically cleared, and the area supports post oaks, cedar elms, and grasses. Site elevation is 275 m above mean sea level.

Previous Work

On 16 February 1987, Texas A&M University recorded the site as a burned rock and lithic scatter site (site form on file, Cultural Resources Management Office, Fort Hood). Cultural materials were observed across an area measuring 120 m northeast-southwest by 70 m northwest-

southeast. Artifacts consisted of an untyped dart point (collected), bifaces and flakes. Some of the heavily weathered burned rocks may have been used as grinding stones, and naturally occurring limonite and sandstone were noted as possible sources of pigment. The deposits comprised a reddish brown sandy loam up to 75 cm thick. Vehicular traffic and erosion disturbed an estimated 65 percent of the site (Mueller-Wille and Carlson 1990b:158–159).

On 5 November 1998, Kleinbach (Fort Hood Cultural Resources Management Office) visited the site to assess potential damage from mechanical juniper clearing conducted in 1997–1998 (site visitation note on file, Cultural Resources Management Office, Fort Hood). Although the area had been flagged, clearing may have affected the northern and western portions of the site, and the site datum could not be re-located.

On 29 October 1999, Prewitt and Associates visited and evaluated the site (Mehalchick, Kleinbach, et al. 2000:159–162). As defined in 1987, its maximum dimensions of 120x70 m were not changed. The site was situated within the

basin where a thin band of sandy sediment was derived from the Paluxy Formation. Slopewash mantled the site, and sediment exposures were observed in a number of gullies in the site area. The profiles consisted of dark sandy loam A horizons over brown sandy loam Bw horizons. This deposit was late Holocene and ranged from 40 to 80 cm thick. An abrupt, wavy boundary separated the Holocene soil from a truncated, late Pleistocene sediment consisting of a reddish brown sandy clay loam Bt horizon. A sparse scatter of flakes and burned rocks was observed, and Feature 1 was discovered near the edge of a juniper push pile in the west-central portion of the site. It consisted of a concentration of small angular burned rocks exposed over a 5x5-m area. Mechanical juniper clearing, two-track roads, and erosion disturbed an estimated 30 percent of the site. Depressions from uprooted trees were 20–25 cm deep, and erosional gullies extended to 60 cm below the present ground surface. Because the site had the potential to yield intact cultural deposits, shovel testing was warranted.

A crew excavated eight shovel tests on 29 March and 9 April 1999. The tests varied from 20 to 100 cm deep, with shallower Holocene deposits occurring at the downslope (western) site margin. Two positive tests yielded one flake and two burned rocks. One test placed in the center of Feature 1 contained 47 burned rocks from the surface to 60 cm. Although the testing results were inconclusive, they demonstrated the presence of buried cultural remains and confirmed that the site had the potential to contain intact archeological deposits. The recommended testing to determine National Register eligibility consisted of a minimum of three backhoe trenches and 8 m² of hand-excavated test units (Mehalchick et al. 2000:162).

Work Performed

Sparse, scattered burned rocks were observed in the area where Feature 1, the burned rock concentration was previously recorded. The shovel test excavated in this area was re-located. The same disturbances noted in 1999 were apparent.

On 21 January 2002, formal testing of 41CV1415 was completed (Figure 4-21). Six backhoe trenches were excavated primarily in the central midslope portion of the site (Table 4-20). Three trenches, excavated within a

45x35-m area, exposed scattered burned rocks, a probable feature, and soil stains of unknown origin between 10 and 130 cm. The deepest deposits were encountered in Backhoe Trenches 3 and 4, situated farthest upslope.

A total of 12.88 m³ was excavated from 11 test units (Table 4-21). Six units originating at the ground surface were free standing or placed beside backhoe trenches. The other five were located inside the trench cuts where the upper 25 to 138 cm of deposits had been mechanically removed. Each excavation was terminated when weathered (Paluxy) sandstone was encountered.

Site Extent and Depth

Based on the extent of the Paluxy sediments and surficial cultural materials, the maximum site dimensions were enlarged to 210 north-south m by 110 m east-west, covering approximately 23,100 m². The mechanical and manual excavations, however, delimit a 45x35-m area where intact features are present to almost 170 cm.

Definition of Analysis Units

Several features and cultural materials throughout the sandy deposits at 41CV1415 suggest repeated occupation of the area. The absolute and relative dates indicate occupation during the Late Prehistoric period, but further temporal refinement is not possible in the absence of discrete occupation zones or components. Therefore, the entire site is considered one analysis unit.

Excavation Results

Backhoe Trenches 2 and 6 reveal classic downslope and upslope Paluxy site profiles, respectively (see Appendix B). Backhoe Trench 2 is composed of a thin A horizon over a well-developed Bt horizon, and Backhoe Trench 6 displays many limestone clasts shed from the limestone scarp (Walnut Clay Formation) and intermixed with the Paluxy sand. Trenches situated on the midslopes show evidence of extreme gully cutting into the late Pleistocene surface, and these gullies are in-filled with late Holocene sandy sediments. The culturally significant deposits are imprinted with weak soil (A-Bw) profiles.

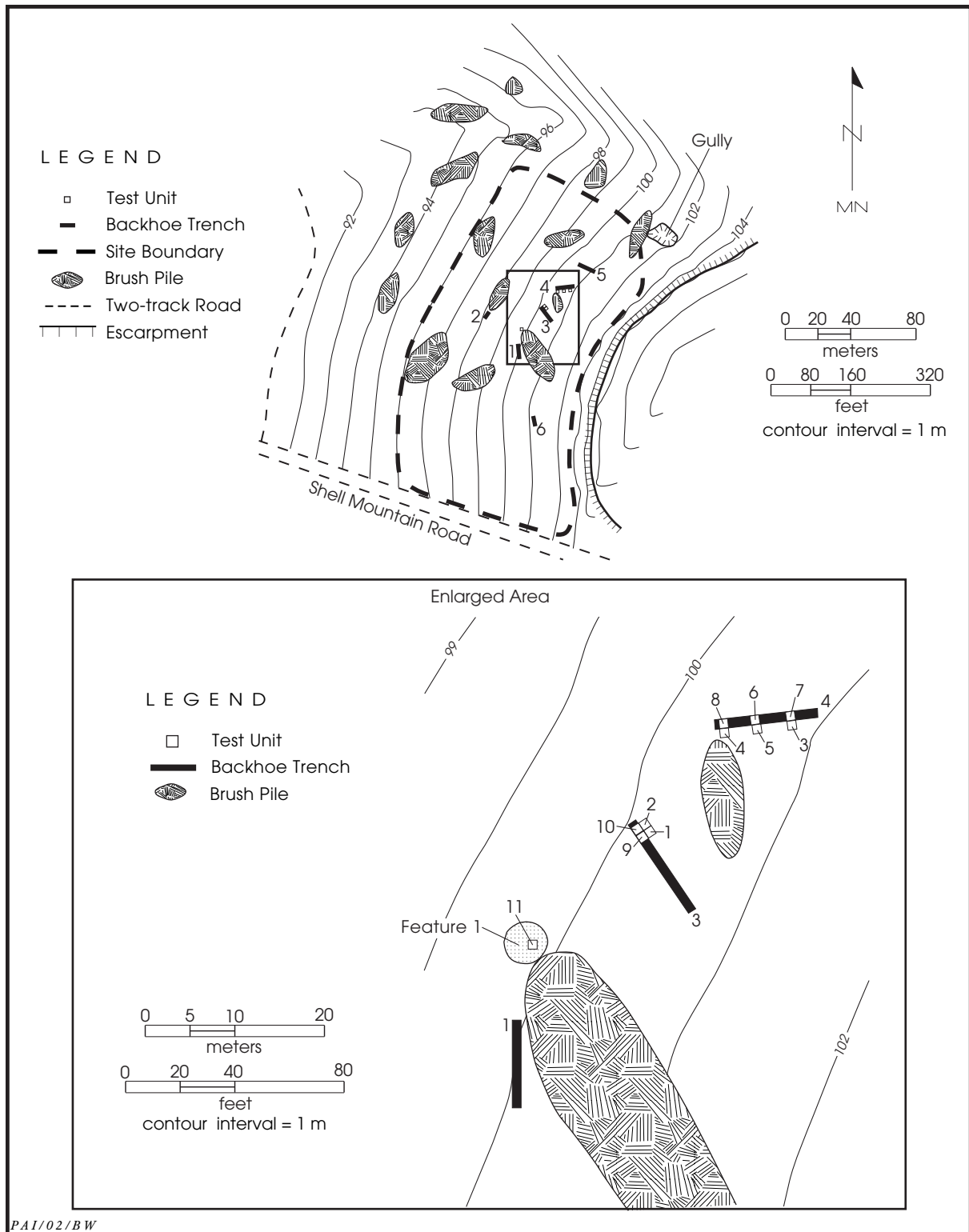


Figure 4-21. Map of 41CV1415 with enlarged area showing test unit locations.

Table 4-20. Backhoe trench summary, 41CV1415

Backhoe Trench	Maximum Dimensions	Cultural Observations
1	8.00 x 0.65 x 1.45 m	–
2	5.50 x 0.65 x 0.60 m	–
3	11.50 x 0.65 x 1.70 m	top of probable burned rock feature at 10–15 cm
4	13.00 x 0.65 x 1.30 m	scattered burned rocks and Rabdotus snail shells at 50–70 cm; soil stains at ca. 130 cm
5	11.00 x 0.65 x 1.40 m	scattered burned rocks at 50 cm
6	5.00 x 0.65 x 1.05 m	–

Eight cultural features were encountered in eight test units, with some occurring in contiguous excavations (Table 4-22). Test Units 5, 6, and 11 contained five of the eight features but produced only 5.1 percent (21 of 410) of the total artifacts (Table 4-23). In contrast, artifacts were most concentrated in association with Features 2, 3, and 8 present in Test Units 1, 2, 3, 9, and 10.

Of the four burned rock concentrations, Features 2 and 4 consisted of small, discrete clusters of tabular rocks 10–23 cm in size, whereas Features 1 and 8 were amorphous concentrations comprised of tabular and angular pieces measuring less than 15 cm. All four concentrations contained one to two layers of mostly fossiliferous limestone, and their functions are unclear. Unmodified flakes were the only artifacts recovered from the feature sediment. There

were sparse or no cultural materials in the fill around Features 1, 4, and 8, but a dense amount of debitage was associated with Feature 2. Flotation samples from Features 1, 4, and 8 yielded oak and rose family wood, but no macrobotanical remains were present in Feature 2 (see Table 4-22 and Appendix D).

Three soil stains (Features 5, 6, and 7) were found in two adjoining excavations (Test Units 5 and 6) and at overlapping depths between 140 and 166 cm (Figure 4-22). Each displayed an irregular basin shape, and the feature matrix was much darker than the surrounding sediment. Only Feature 5 contained charcoal, and charred wood collected at 140 cm yielded a conventional radiocarbon age of 660 ± 40 B.P. (Beta-167182; see Appendix A). None of the stains produced cultural materials, and only two flakes were found in the surrounding matrix. Charred plant

Table 4-21. Test unit summary, 41CV1415

Test Unit	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
1	1.0 x 1.0 m	surface	150 cm	1.45	Feature 3 at 19–52 cm; Feature 8 at 62–74
2	1.0 x 1.0 m	surface	150 cm	1.40	Feature 3 at 19–52 cm; Feature 8 at 62–74
3	1.0 x 1.0 m	surface	190 cm	1.90	Feature 2 at 58–75 cm
4	1.0 x 1.0 m	surface	170 cm	1.70	–
5	1.0 x 1.0 m	surface	180 cm	1.73	Feature 5 at 140–153 cm; Feature 6 at 150–166 cm; Feature 7 at 140–151 cm
6*	1.0 x 0.6 m	138 cm	180 cm	0.24	Feature 5 at 140–53 cm; Feature 7 at 140–151 cm
7*	1.0 x 0.6 m	50 cm	170 cm	0.72	–
8*	1.0 x 0.6 m	85 cm	190 cm	0.63	–
9*	1.0 x 0.7 m	25 cm	150 cm	0.90	Feature 3 at 19–52 cm
10*	1.0 x 0.65 m	25 cm	150 cm	0.78	Feature 3 at 19–52 cm
11	1.0 x 1.0 m	surface	150 cm	1.43	Feature 1 at 10–23 cm

*upper deposits mechanically removed

material from Features 5 and 6 consisted of hickory, oak, and willow family woods, but Feature 7 was devoid of macrobotanical remains. These features may have served as some type of expedient cooking pits.

The largest and thickest feature was a basin-shaped hearth or earth oven (Feature 3) present in four contiguous units (Figure 4-23). The top of Feature 3 was first observed in the north end of Backhoe Trench 3, and Test Units 1, 2, 9, and 10 were excavated to expose it. About 60 percent of the feature's burned rocks were angular, tabular, and subrounded fragments less than 10 cm in size; the rest were larger tabular pieces and slabs measuring up to 25 cm. Most of the rocks used to construct the hearth were fossiliferous limestone.

Identified as oak wood, charcoal collected at 44 cm yielded a conventional radiocarbon age of 860 ± 60 B.P. (Beta-167183; see Appendix A). Flotation and macroplant samples contained hickory, oak and willow family woods, as well as indeterminate bulbs and wood. The feature fill contained stone tools, debitage, groundstones, and unburned canid- to deer-sized animal bones. Around the feature, similar types of cultural materials were found, including deer-pronghorn and deer- to bison-sized mammal bone fragments.

Overall, the excavations yielded sparse stone tools and faunal remains, along with a moderate amount of debitage. The only temporally sensitive artifacts were nondiagnostic arrow points. The most common identified chert type is Fort Hood Yellow, which comprises 16.5 percent of the stone artifacts. Outcrops of Fort Hood Yellow are located across the northern portion of the base (no more than about 10 km from the site) and in the bedload of Cowhouse Creek (within 3–5 km of the site). More than half (14 of 22) of the bones are in the deer-sized range, and 6 specimens show spiral fractures. Other identifiable remains include 6 snake vertebra, but it is unclear if they represent modern intrusive remains. One *Ablema plicata* mussel shell is a cut specimen with a slightly worn notch at the midsection of the valve body. The only other mussel shell consists of an unmodified *heptodea fragilis* umbo fragment. Fourteen flotation and two macroplant samples were collected from various general level contexts in four test units. Two were samples of homogeneous sandy sediments that contained oak and willow family woods. The

rest were retrieved from discolored, mottled, and charcoal-flecked areas that produced hickory, oak, willow family, and indeterminate woods, as well as grape, mulberry, and plum seed. These areas were not well defined and most likely resulted from bioturbation.

Discussion

Site 41CV1415 is a multiple-occupation open campsite buried in a niche setting associated with the Paluxy Formation. Several discrete features that occur at various depths are evidence of intensive and repeated habitation of the site. The cultural deposits are difficult to trace because a complex sequence of gully formation and infilling characterizes the sandy deposits. Calibrated radiocarbon dates (2-sigma range) of A.D. 1030–1280 and 1280–1400 correspond to Late Prehistoric occupations, particularly during the Toyah phase. The more-recent date was obtained at a greater depth, but this suggests that activities at various times took place within gullies that were filling at different rates.

Although it is difficult to identify vertically discrete components (i.e., contemporaneous features and associated artifact assemblages) over any distances, three soil stains encountered at approximately the same depth within a 1x2-m area (Test Units 5 and 6) most likely represent activities on a single, intact living surface. The macrobotanical analysis reveals oak wood is commonly used for fuel, and plant food resources include geophytes, mulberries, grapes, and plums. Based on the testing results, 41CV1415 is recommended as eligible for listing in the National Register.

41CV1554

Site Setting

Site 41CV1554 is situated on a T₁ terrace immediately downstream from the Red Bluff locality on Owl Creek. This site is bounded by Owl Creek and very steep colluvial. An ephemeral drainage bisects the surface near the southern site margin. The area supports a dense riparian woodland and understory vegetation, and surface visibility is extremely poor. Site elevation is 210–230 m above mean sea level.

Table 4-22. Feature summary, 41CV1415

Feature No.	Feature Type	Location	Depth	Maximum Thickness	Excavated Dimensions	Estimated Dimensions	Time Period	Macrobotanical Remains	Cultural Materials	Burned Rock Count	Burned Rock Weight (kg)	Disturbances
1	burned rock concentration	TU* 11	10–23 cm	13 cm	99 x 84 cm	500 x 500 cm	unknown	oak wood	debitage	67	12.00	bioturbation
2	burned rock concentration	TU 3	58–75 cm	17 cm	40 x 18 cm	40 x 40 cm	unknown	none	debitage	6	10.50	trenching
3	basin-shaped hearth	TU 1, 2, 9, 10	19–52 cm	33 cm	200 x 104 cm	200 x 104 cm	Austin/Toyah phase	indeterminate bulbs and wood; oak and willow family wood	stone tools, debitage, groundstones, bones	307	88.75	trenching, bioturbation
4	burned rock concentration	TU 11	128–134 cm	6 cm	30 x 28 cm	unknown	unknown	oak and rose family wood	–	3	5.50	bioturbation
5	soil stain	TU 5, 6	140–153 cm	13 cm	55 x 45 cm	55 x 45 cm	Toyah phase	hickory and oak wood	–	–	–	bioturbation
6	soil stain	TU 5	150–166 cm	16 cm	26 x 18 cm	unknown	unknown	willow family wood	–	–	–	bioturbation
7	soil stain	TU 6	140–151 cm	11 cm	77 x 27 cm	unknown	unknown	none	–	–	–	–
8	burned rock concentration	TU 1, 2	62–74 cm	12 cm	76 x 38 cm	unknown	unknown	oak wood	debitage	11	5.00	bioturbation

* TU = Test Unit

Table 4-23. Summary of cultural materials from contiguous test units and Test Unit 11, 41CV1415

Provenience	Artifact Totals										Burned Rock Counts			Burned Rock Weights (kg)
	Untypeable Arrow Points	Arrow Point Preform	Bifaces	Edge-modified Flakes	Debitage	Metates	Possible Pitted Stone	Modified Mussel Shell	Unmodified Bones	Unmodified Mussel Shell	Burned Rock Counts			
Test Units 1, 2, 9, and 10	-	-	-	-	2	-	-	-	2	-	-	5	1.00	
	-	-	-	-	5	-	-	-	5	-	-	19	3.50	
	-	1	2	-	44	1	1	-	49	-	-	307	88.75	
	-	-	-	-	26	-	-	-	26	-	-	47	7.50	
	-	-	-	-	22	1	-	-	23	2	-	67	12.25	
	1	-	-	-	22	-	-	-	23	1	-	38	15.00	
	-	-	-	1	20	-	-	-	21	-	-	24	11.35	
	-	-	-	-	1	-	-	-	1	-	-	11	5.00	
	1	-	-	-	15	-	-	-	16	-	-	28	4.60	
	-	-	-	-	4	-	-	-	4	-	-	16	0.85	
	-	-	-	-	3	-	-	-	3	-	-	3	0.20	
	-	-	-	-	1	-	-	-	1	-	-	1	0.10	
	-	-	-	-	2	-	-	-	2	-	-	-	-	
	-	-	-	-	-	-	-	-	-	-	1	1	0.20	
	-	-	-	-	1	-	-	-	1	-	-	-	-	
-	-	-	-	1	-	-	-	1	-	-	1	0.10		
-	-	-	-	-	-	-	-	-	-	-	-	-		
Subtotal	2	1	2	1	169	2	1	-	178	8	1	568	150.40	
Test Units 3 and 7	-	-	-	-	3	-	-	-	3	-	-	-	-	
	-	-	-	-	2	-	-	-	2	-	-	-	-	
	-	-	-	-	9	-	-	-	9	-	-	-	-	
	-	-	-	-	3	-	-	-	3	-	-	-	-	
	-	-	-	-	14	-	-	-	14	-	-	2	0.10	
	-	-	-	-	30	-	-	-	30	-	-	2	0.10	
	-	-	-	-	1	-	-	-	1	-	-	6	10.50	
-	-	-	-	53	-	-	-	53	8	-	9	5.25		

Table 4-23, continued

	Untypeable Arrow Points	Arrow Point Preform	Bifaces	Edge-modified Flakes	Debitage	Metates	Possible Pitted Stone	Modified Mussel Shell	Artifact Totals	Unmodified Bones	Unmodified Mussel Shell	Burned Rock Counts	Burned Rock Weights (kg)
Provenience													
Level 8 (70–80 cm)	–	–	–	–	15	–	–	–	15	4	–	7	0.75
Level 9 (80–90 cm)	–	–	–	–	14	–	–	–	14	–	–	3	0.25
Level 10 (90–100 cm)	–	–	–	–	2	–	–	1	3	–	–	5	2.50
Level 11 (100–110 cm)	–	–	–	–	7	–	–	–	7	–	–	4	0.30
Level 12 (110–120 cm)	–	–	–	–	7	–	–	–	7	–	–	2	1.50
Level 13 (120–130 cm)	–	–	–	–	2	–	–	–	2	–	–	2	0.75
Level 14 (130–140 cm)	–	–	–	–	3	–	–	–	3	–	–	1	0.10
Level 15 (140–150 cm)	–	–	–	–	2	–	–	–	2	–	–	1	0.20
Level 16 (150–160 cm)	–	–	1	–	2	–	–	–	3	–	–	–	–
Level 17 (160–170 cm)	–	–	–	–	3	–	–	–	3	–	–	–	–
Level 18 (170–180 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 19 (180–190 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Subtotal	–	–	1	–	172	–	–	1	174	12	–	44	22.30
Test Units 4 and 8													
Level 1 (0–10 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 2 (10–20 cm)*	–	–	–	–	4	–	–	–	4	–	–	–	–
Level 3 (20–30 cm)*	–	–	–	–	3	–	–	–	3	–	–	2	0.25
Level 4 (30–40 cm)	–	–	–	1	–	–	–	–	1	–	–	6	0.25
Level 5 (40–50 cm)	–	–	–	–	4	–	–	–	4	–	–	8	2.25
Level 6 (50–60 cm)	–	–	–	–	5	–	–	–	5	–	–	–	–
Level 7 (60–70 cm)	–	–	–	–	–	–	–	–	–	–	–	1	0.25
60–80 cm	–	–	–	–	6	–	–	–	6	2	–	–	–
Level 8 (70–80 cm)	–	–	1	–	3	–	–	–	4	–	–	4	1.75
Level 9 (80–90 cm)	–	–	–	–	–	–	–	–	–	–	–	3	0.60
Level 10 (90–100 cm)	–	–	–	–	2	–	–	–	2	–	–	5	0.25
Level 11 (100–110 cm)	–	–	–	–	1	–	–	–	1	–	–	–	–
Level 12 (110–120 cm)	–	–	–	–	1	–	–	–	1	–	–	2	0.10
118–137 cm	–	–	–	–	2	–	–	–	2	–	–	–	–

Table 4-23, continued

Provenience	Artifact Totals								Unmodified Bones	Unmodified Mussel Shell	Burned Rock Counts	Burned Rock Weights (kg)
	Untypeable Arrow Points	Arrow Point Preform	Bifaces	Edge-modified Flakes	Debitage	Metates	Possible Pitted Stone	Modified Mussel Shell				
Level 13 (120–130 cm)	-	-	-	-	1	-	-	-	-	-	1	0.10
Level 14 (130–140 cm)	-	-	-	-	1	-	-	-	-	-	2	0.35
Level 15 (140–150 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 16 (150–160 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 17 (160–170 cm)	-	-	-	-	1	-	-	-	-	-	-	-
Level 18 (170–180 cm)	-	-	-	-	1	-	-	-	-	-	-	-
Level 19 (180–190 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	-	-	1	1	35	-	-	-	2	-	34	6.15
Test Units 5 and 6	-	-	-	-	-	-	-	-	-	-	-	-
Level 1 (0–10 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 2 (10–20 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 3 (20–30 cm)	-	-	-	-	2	-	-	-	-	-	2	0.10
Level 4 (30–40 cm)	-	-	-	-	-	-	-	-	-	-	5	1.50
Level 5 (40–50 cm)	-	-	-	-	-	-	-	-	-	-	6	1.50
Level 6 (50–60 cm)	-	-	-	-	-	-	-	-	-	-	7	0.10
Level 7 (60–70 cm)	-	-	-	-	4	-	-	-	-	-	4	1.00
Level 8 (70–80 cm)	-	-	-	-	-	-	-	-	-	-	3	1.00
Level 9 (80–90 cm)	-	-	-	-	5	-	-	-	-	-	2	0.75
Level 10 (90–100 cm)	-	-	-	-	-	-	-	-	-	-	4	1.00
Level 11 (100–110 cm)	-	-	-	-	-	-	-	-	-	-	3	3.00
Level 12 (110–120 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 13 (120–130 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 14 (130–140 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 15 (140–150 cm)	-	-	-	-	-	-	-	-	-	-	3	0.25
Feature 5 (140–153 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Feature 6 (150–166 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Feature 7 (140–151 cm)	-	-	-	-	-	-	-	-	-	-	-	-
Level 16 (150–160 cm)	-	-	-	-	1	-	-	-	-	-	-	-

Table 4-23, continued

Provenience	Untypeable Arrow Points	Arrow Point Preform	Bifaces	Edge-modified Flakes	Debitage	Metates	Possible Pitted Stone	Modified Mussel Shell	Artifact Totals					Unmodified Bones	Unmodified Mussel Shell	Burned Rock Counts	Burned Rock Weights (kg)
Level 17 (160–170 cm)	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	–	–
Level 18 (170–180 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subtotal	–	–	–	–	13	–	–	–	13	–	–	–	–	–	–	39	10.20
Test Unit 11																	
Level 1 (0–10 cm)	–	–	–	1	–	–	–	–	1	–	–	–	–	–	–	5	0.50
Feature 1 (10–23 cm)	–	–	–	–	3	–	–	–	3	–	–	–	–	–	–	67	12.00
Level 3 (20–30 cm)	–	–	–	–	1	–	–	–	1	–	–	–	–	–	–	6	0.25
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 5 (40–50 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	0.25
Level 6 (50–60 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	0.10
Level 7 (60–70 cm)	–	–	–	–	2	–	–	–	2	–	–	–	–	–	–	3	0.10
Level 8 (70–80 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9	3.50
Level 9 (80–90 cm)	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	4	0.20
Level 10 (90–100 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1.50
Level 11 (100–110 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	5.00
Level 12 (110–120 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 13 (120–130 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Feature 4 (128–134 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3	5.50
Level 14 (130–140 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Level 15 (140–150 cm)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Subtotal	–	–	1	1	6	–	–	–	8	–	–	–	–	–	–	107	28.90
Total	2	1	5	3	395	2	1	1	410	–	22	1	–	–	–	792	217.95

*contains recent items

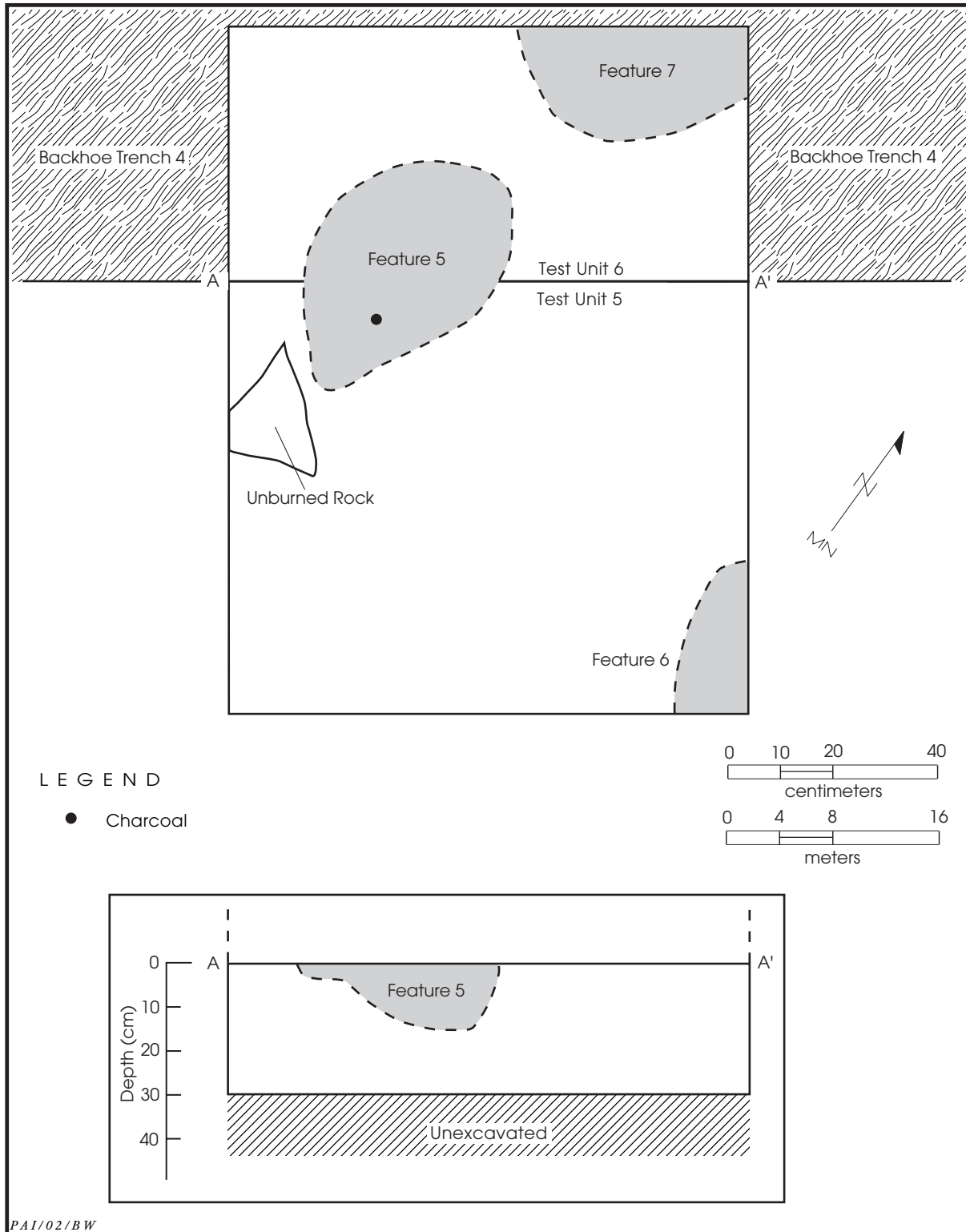


Figure 4-22. Plan of Features 5, 6, and 7 and Feature 5 profile, 41CV1415.

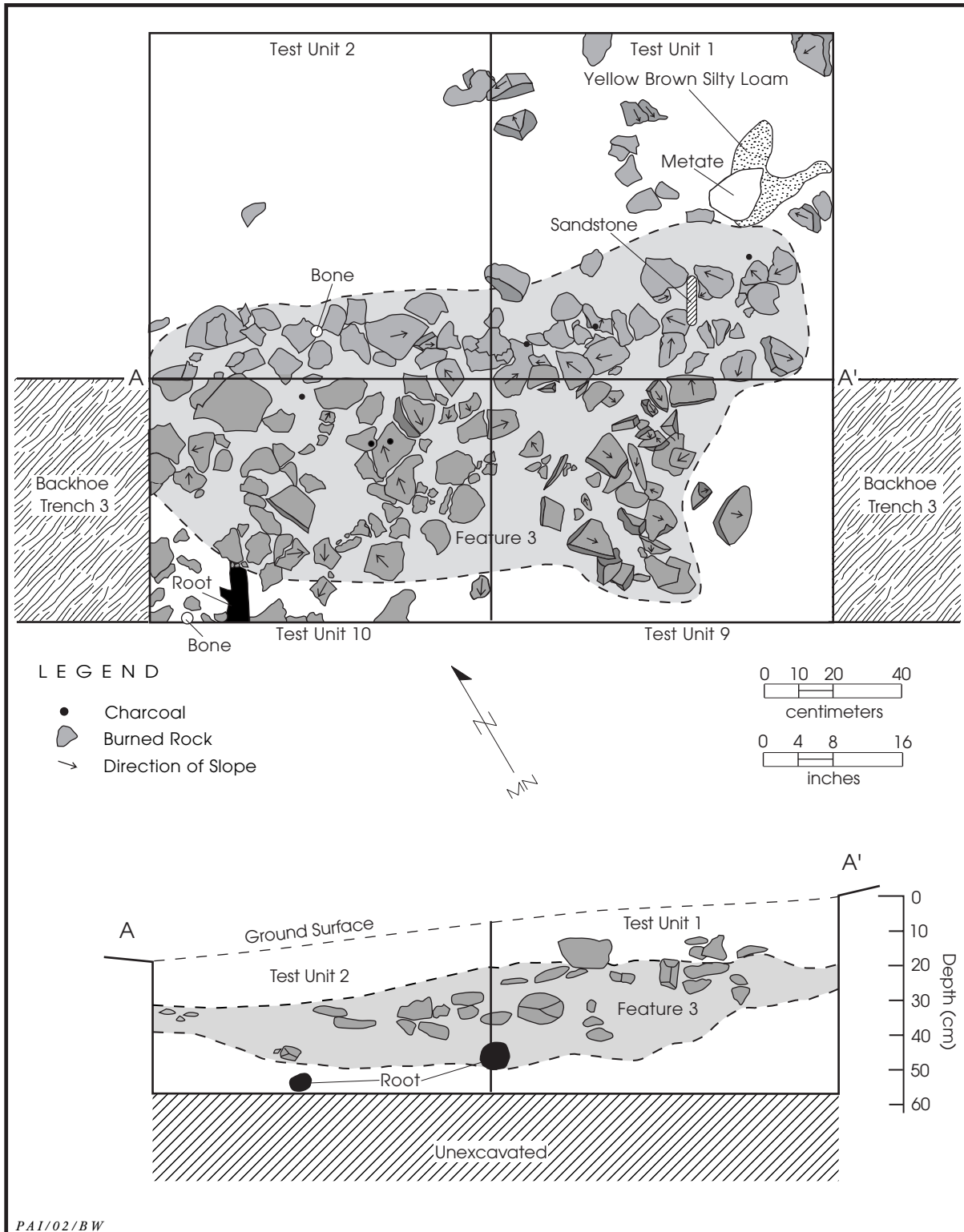


Figure 4-23. Plan and profile of Feature 3, 41CV1415.

Previous Work

Mariah Associates originally discovered the site in December 1992 while conducting reconnaissance survey but did not formally record it until 10 May 1993 (site form on file, Cultural Resources Management Office, Fort Hood; Trierweiler, ed. 1994:A1573–A1577).

The site occupied the T_1 surface on the south bank of Owl Creek. The site dimensions were ca. 750 m northeast-southwest by 300 m northwest-southeast as depicted on the sketch map, but the site form listed the dimensions as 360x140 m. The site setting was complex, and multiple alluvial fills were exposed in the cutbank along Owl Creek. At the north end of the site, the terrace consisted of a relatively high, older T_{1a} resting 6–7 m above the channel, and a slightly lower T_{1b} rising 3–5 m above the channel. Both surfaces sloped toward the valley axis. At the southern site boundary, the T_1 lapped onto the upland and high Pleistocene terrace and was underlain by the Fort Hood and Georgetown alluvial fills (Nordt 1992:28–35, Appendix C). Within the Georgetown alluvium, a bulk humate sample obtained from the upper part (Bk horizon) of the Royalty paleosol at 262 to 282 cm yielded a radiocarbon age of $11,325 \pm 150$ B.P. (GX-15763). Nordt defined the Fort Hood fill as exhibiting an A-Bw-Bk1-Bk2 profile, which rested unconformably on the Georgetown alluvium where a 2Bkb-2Cb profile had formed. The West Range and Ford alluvial fills were inset to these older deposits but were poorly exposed. The West Range appeared to exhibit an A-Bw-Bk profile and may drape the leading edge of the Fort Hood alluvium. A thin veneer of Ford deposits capped the leading edge of the West Range at the northern end of the site. Dense ground cover rendered surface visibility extremely poor, but sparse lithic artifacts and burned rocks were exposed in a road and in cow trails. Chert cobbles were noted in the channel of Owl Creek. Erosion, cattle, bioturbation, and historic modification were noted as minimal disturbances in the area. Because the site had the potential to yield intact cultural deposits, shovel testing was warranted.

On 14–17 May 1993, a crew excavated 60 shovel tests to a maximum depth of 60 cm. Twenty-six tests produced a total of 132 flakes and 1 groundstone from the surface to 60 cm, but 75 percent ($n = 99$) of the artifacts occurred

in the upper 30 cm of deposits. The shovel tests revealed two concentrations of buried artifacts. Seven of 12 tests placed in a 11,000-m² area at the southern site margin and south-southwest of an ephemeral drainage yielded cultural materials. Near the north-central portion of the terrace, 12 positive shovel tests occurred in an area of approximately 14,400 m². Two shovel tests in this area contained eight burned rocks that were thought to represent a subsurface feature at 20–30 cm. The shovel testing results identified areas of the site that were likely to contain discrete cultural deposits. Researchers also noted that intact archeological materials might exist below the limits of shovel testing. The recommended testing to determine National Register eligibility consisted of a minimum of six backhoe trenches and 8 to 12 m² of hand-excavated test units (Trierweiler, ed. 1994:A1575).

Work Performed

Re-examination of 41CV1554 revealed extremely sparse cultural materials in cattle trails and along an overgrown road. The site's surface appeared minimally disturbed, and a modern campfire depicted on the 1993 site map was still intact. Generally, there were no cutbank exposures, and the high vertical cutbank toward the upstream (southern) end of the site could not be safely examined.

Because the site was within endangered bird habitat, trenching was restricted to previously cleared areas. Because of this limitation, there was no trenching in the areas where previously excavated shovel tests were most productive, but test units were placed in these locales. The backhoe could only access the north-central site margin, an area measuring 120x65 m and covering approximately 14 percent of the site.

On 20 December 2001, formal testing was completed at 41CV1554 (Figure 4-24). Three of six backhoe trenches exposed sparse cultural materials scattered between the surface and 170 cm (Table 4-24). Three of eight test units were located in a scraped area next to a backhoe trench or in the original trench cut where upper deposits had been mechanically removed (Table 4-25). Excavation of the five other units began at the present ground surface. A total of 9.69 m³ was hand excavated,

and the test units were halted at arbitrary depths.

Site Extent and Depth

Based on the extent of the Holocene terrace, the site was redefined as 410 m northeast-southwest by 135 m northwest-southeast, and covers approximately 55,350 m². Cultural materials are present from the surface to at least 340 cm. All of the subsurface testing sampled Fort Hood or Georgetown alluvial deposits, and no West Range deposits were encountered.

Definition of Analysis Units

Two analysis units are defined based on differing depositional fills and the archeological materials contained therein. Analysis Unit 1 corresponds to the Fort Hood alluvium, present from the surface to a maximum depth of 220 cm. Analysis Unit 2 subsumes the Georgetown alluvium; the top of the deposit ranges from ca. 200 to 260 cm deep and is present to at least 340 cm.

Analysis Unit 1

Excavation Results

All six backhoe trenches exposed Fort Hood alluvium, and six of the eight test units sampled these deposits. This deposit, imprinted with an A-B profile, was encountered at the surface and varied from 200 to 270 cm thick (see Appendix B).

Feature 1 was confined primarily to the northwest quadrant of Test Unit 8 at 40–48 cm. This burned rock concentration probably represents a dispersed hearth. The feature consisted of two rock layers and measured 68 cm north-south by 54 cm east-west. A portion of the feature was removed during trenching, and its maximum dimensions are estimated to have been 70x110 cm. The 43 tabular and subangular pieces of limestone (8 kg) were less than 10 cm in size. One edge-modified flake and four flakes were found in the feature fill, with burned rocks and debitage scattered in the surrounding matrix (Table 4-26). There were no charred plant remains in a flotation sample (see Appendix D).

One biface was collected from Backhoe Trench 4, and 371 artifacts were recovered from

test units. Sixty-three (75 percent) of 84 excavation levels produced a sparse number of expedient tools and burned rocks, one core, and moderate amounts of debitage. Slight increases in the frequency of lithic artifacts occurred at 30–50 cm and 40–60 cm in Test Units 3 and 7. Ubiquitous cultural materials at 70–90 cm in Test Unit 8 were intermixed with dense gravels. A charcoal sample collected from Test Unit 1 contained insufficient material for dating (see Appendix A).

Discussion

The vertical distribution of artifacts and feature suggest that there are discrete cultural deposits in the upper 100 cm of alluvial sediment. The archeological remains would correspond to Early to Middle Archaic components because they are encapsulated in the Fort Hood alluvium.

Analysis Unit 2

Excavation Results

Most of the trenches encountered the Georgetown alluvium between 200 and 260 cm, and three test units were excavated through this deposit. Sixty percent (9 of 15) of the levels excavated from Test Units 1 and 4 produced debitage, but no one level yielded more than three flakes (Table 4-27). Two levels in Test Unit 1 also contained small amounts of charcoal, and one sample was submitted but found to be insufficient for radiocarbon dating. Eight levels from Test Unit 6 were devoid of artifacts.

Discussion

Sparse artifacts are buried in the upper deposits of the Georgetown alluvium between 270 and 340 cm. Although there is no Royalty paleosol at 41CV1554, this buried soil is exposed immediately upstream from the site where its Bk horizon has been radiocarbon dated to 11,852–11,044 B.C. (calibrated, 2-sigma range). Nordt (1992:69) notes that widespread erosional stripping of the Royalty Paleosol occurred in the early Holocene, but this radiocarbon date should approximate the age of the upper Georgetown alluvial deposits at 41CV1554. It appears that

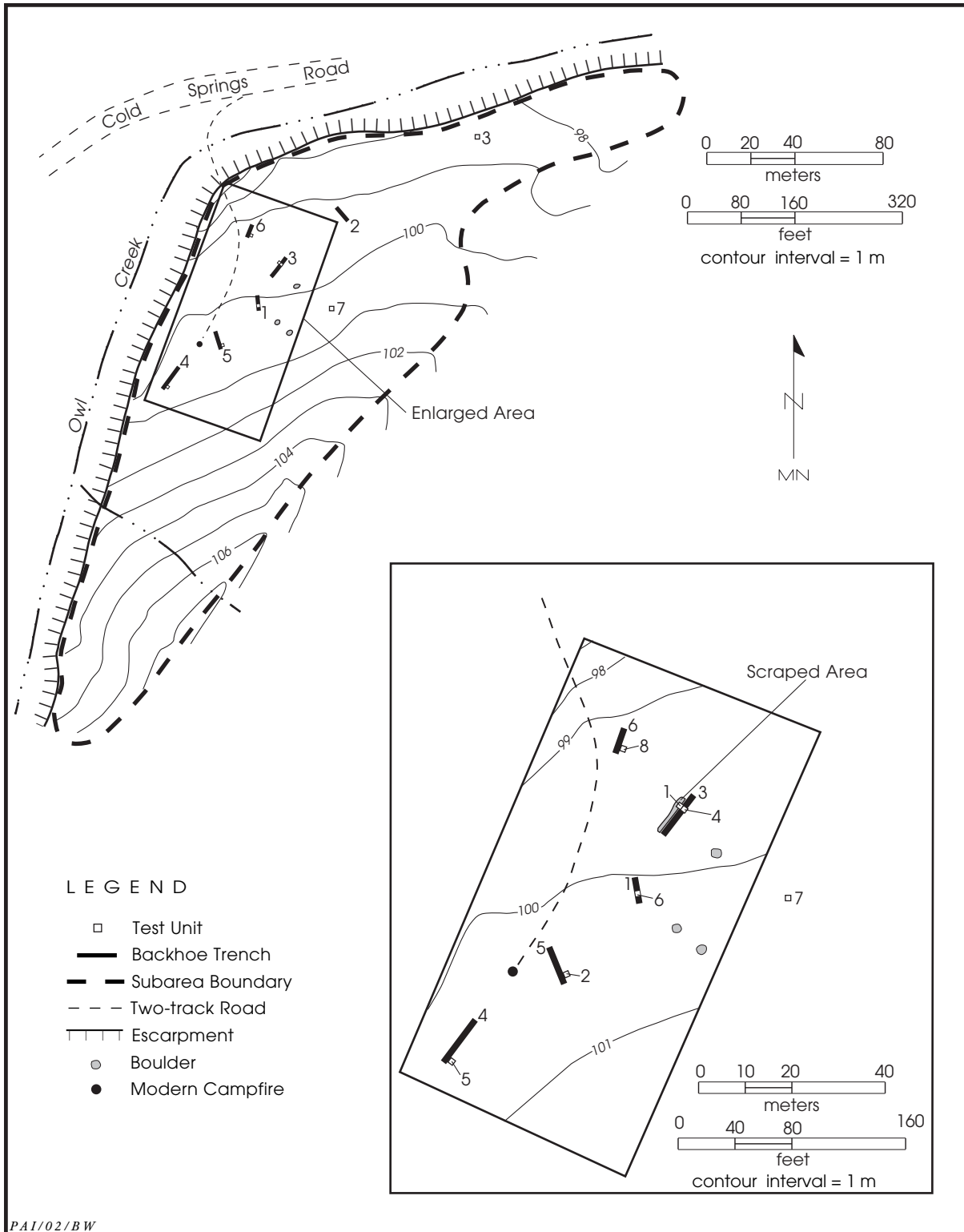


Figure 4-24. Map of 41CV1554 with enlarged area showing test unit and backhoe trench locations.

Table 4-24. Backhoe trench summary, 41CV1554

Backhoe Trench	Maximum Dimensions	Cultural Observations
1	6.00 x 0.65 x 2.70 m	–
2	8.50 x 0.65 x 2.50 m	–
3	12.00 x 1.30 x 3.10 m	–
4	11.50 x 0.65 x 2.90 m	flakes and <i>Rabdotus</i> snail shells at 100–110 cm; biface fragment (collected) at 170 cm
5	9.00 x 0.65 x 2.30 m	1 small burned rock at 0–50 cm; 1 burned rock, flakes, and <i>Rabdotus</i> snail shells at ca. 150 cm
6	5.50 x 0.65 x 1.60 m	burned and unburned rocks at 40–50 cm; burned and unburned rocks and a biface fragment at 75–80 cm

this site may contain subsurface Paleoindian materials. It is possible that additional cultural remains are present below the tested deposits, but the likelihood of intact cultural deposits decreases deeper in the Georgetown alluvium (Nordt 1992:74).

Summary and Conclusions

The depositional history and cultural materials recovered from 41CV1554 suggest that the site was used from the Paleoindian through Middle Archaic periods. Early to Middle Archaic components are not common on Fort Hood, but some of the materials from 41CV1554 represent (Analysis Unit 1) substantial Early to Middle Archaic occupations. Furthermore, Paleoindian occupations are extremely rare on Fort Hood lands, and only two open campsites—41CV1554 and 41BL154 (Abbott and Trierweiler 1995a:73-95)—are

known to contain Paleoindian components within the Georgetown alluvium.

Although the cultural materials associated with the earliest component at 41CV1554 (Analysis Unit 2) are relatively sparse, they could represent Paleoindian remains in good geomorphic context but stratigraphically below the Royalty Paleosol, which has been stripped from this locality. The three test units that sampled the Georgetown deposits represent only a tiny portion of a very large area (at least 100x50 m). Because backhoe trenching was limited to a cleared area in the central portion of the site, the full extent of the buried Georgetown alluvial deposits is not known. Based on the testing results, all of the late Paleoindian and Early to Middle Archaic remains have considerable research potential, and 41CV1554 is recommended as eligible for listing in the National Register.

Table 4-25. Test unit summary, 41CV1554

Test Unit	Location*	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Feature
1	Scraped area along west wall of BHT 3	1.0 x 1.0 m	170 cm	340 cm	1.65	–
2	Along east wall of BHT 5	1.0 x 1.0 m	surface	200 cm	2.00	–
3	Isolated unit	1.0 x 1.0 m	surface	100 cm	1.00	–
4	In bottom of BHT 3	1.0 x 0.6 m	257 cm	330 cm	0.42	–
5	East wall of BHT 4	1.0 x 1.0 m	surface	200 cm	2.00	–
6	In bottom of BHT 1	0.5 x 0.5 m	156 cm	200 cm	0.10	–
		1.0 x 0.5 m	200 cm	240 cm	0.20	
		1.4 x 0.5 m	240 cm	300 cm	0.42	
7	Isolated unit	1.0 x 1.0 m	surface	100 cm	1.00	–
8	East wall of BHT 6	1.0 x 1.0 m	surface	90 cm	0.90	Feature 1 at 40–48 cm

* BHT = backhoe trench

Table 4-26. Summary of cultural materials from Analysis Unit 1, 41CV1554

Provenience	Biface	Gravers	Core Tool	Edge-modified Flakes	Core	Debitage	Artifact Totals	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 1									
0–180 cm*	–	–	–	–	–	–	–	–	–
Levels 19–21 (180–210 cm)	–	–	–	–	–	–	–	–	–
Level 22 (210–220 cm)	–	–	–	–	–	1	1	–	–
Level 23 (220–230 cm)	–	–	–	–	–	4	4	–	–
Level 24 (230–240 cm)	–	–	–	–	–	–	–	–	–
Level 25 (240–250 cm)	–	–	–	–	–	1	1	–	–
Level 26 (250–260 cm)	–	–	–	–	–	2	2	–	–
Subtotal	–	–	–	–	–	8	8	–	–
Test Unit 2									
Level 1 (0–10 cm)	–	–	–	–	–	1	1	–	–
Level 2 (10–20 cm)	–	–	–	–	–	2	2	–	–
Level 3 (20–30 cm)	–	–	–	–	–	1	1	–	–
Levels 4–6 (30–60 cm)	–	–	–	–	–	–	–	–	–
Level 7 (60–70 cm)	–	–	–	–	–	1	1	–	–
Level 8 (70–80 cm)	–	–	–	–	–	–	–	1	0.10
Level 9 (80–90 cm)	–	–	–	–	–	2	2	–	–
Level 10 (90–100 cm)	–	–	–	–	–	2	2	–	–
Level 11 (100–110 cm)	–	–	–	–	–	2	2	1	0.10
Level 12 (110–120 cm)	–	–	–	–	–	3	3	–	–
Level 13 (120–130 cm)	–	–	–	–	–	5	5	–	–
Level 14 (130–140 cm)	–	–	–	–	–	1	1	–	–
Level 15 (140–150 cm)	–	–	–	–	–	3	3	–	–
Level 16 (150–160 cm)	–	–	–	–	–	1	1	–	–
Level 17 (160–170 cm)	–	–	–	–	–	–	–	–	–
Level 18 (170–180 cm)	–	–	–	–	–	4	4	–	–
Level 19 (180–190 cm)	–	–	–	–	–	1	1	–	–
Level 20 (190–200 cm)	–	–	–	–	–	1	1	–	–
Subtotal	–	–	–	–	–	30	30	2	0.20
Test Unit 3									
Level 1 (0–10 cm)	–	–	–	–	–	2	2	–	–
Level 2 (10–20 cm)	–	1	–	1	–	2	4	–	–
Level 3 (20–30 cm)	–	–	–	–	–	7	7	–	–
Level 4 (30–40 cm)	–	–	–	–	–	28	28	–	–
Level 5 (40–50 cm)	–	–	–	–	–	21	21	–	–
Level 6 (50–60 cm)	–	–	–	–	–	10	10	–	–
Level 7 (60–70 cm)	–	–	1	–	–	17	18	–	–
Level 8 (70–80 cm)	–	–	–	1	–	14	15	–	–
Level 9 (80–90 cm)	–	–	–	1	–	3	4	–	–
Level 10 (90–100 cm)	–	–	–	–	–	–	–	–	–
Subtotal	–	1	1	3	–	104	109	–	–

Table 4-26, continued

Provenience	Biface	Gravers	Core Tool	Edge-modified Flakes	Core	Debitage	Artifact Totals	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 5									
Level 1 (0–10 cm)	–	–	–	–	–	1	1	–	–
Level 2 (10–20 cm)	–	–	–	–	–	–	–	–	–
Level 3 (20–30 cm)	–	–	–	–	–	1	1	–	–
Level 4 (30–40 cm)	–	–	–	–	–	–	–	–	–
Level 5 (40–50 cm)	–	–	–	–	–	2	2	–	–
Level 6 (50–60 cm)	–	–	–	–	–	3	3	2	0.10
Level 7 (60–70 cm)	–	–	–	–	–	2	2	–	–
Level 8 (70–80 cm)	–	–	–	–	–	4	4	3	0.25
Level 9 (80–90 cm)	–	–	–	–	–	4	4	–	–
Level 10 (90–100 cm)	–	–	–	–	–	9	9	–	–
Level 11 (100–110 cm)	–	–	–	–	–	7	7	–	–
Level 12 (110–120 cm)	–	–	–	–	–	9	9	–	–
Level 13 (120–130 cm)	–	–	–	–	–	3	3	–	–
Level 14 (130–140 cm)	–	–	–	–	–	5	5	–	–
Level 15 (140–150 cm)	–	–	–	–	–	8	8	–	–
Level 16 (150–160 cm)	–	–	–	–	–	–	–	–	–
Level 17 (160–170 cm)	–	–	–	–	–	8	8	–	–
Level 18 (170–180 cm)	–	–	–	–	–	3	3	–	–
Level 19–20 (180–200 cm)	–	–	–	–	–	–	–	–	–
Subtotal	–	–	–	–	–	69	69	5	0.35
Test Unit 6									
0–156 cm*	–	–	–	–	–	–	–	–	–
156–160 cm	–	–	–	–	–	–	–	–	–
Levels 17–21 (160–210 cm)	–	–	–	–	–	–	–	–	–
Level 22 (210–220 cm)	–	–	–	–	–	1	1	–	–
Subtotal	–	–	–	–	–	1	1	–	–
Test Unit 7									
Level 1 (0–10 cm)	–	–	–	1	–	1	2	–	–
Level 2 (10–20 cm)	–	–	–	–	–	8	8	–	–
Level 3 (20–30 cm)	–	–	–	–	–	3	3	–	–
Level 4 (30–40 cm)	–	–	–	–	–	7	7	–	–
Level 5 (40–50 cm)	–	–	–	–	1	11	12	–	–
Level 6 (50–60 cm)	–	–	–	–	–	10	10	–	–
Level 7 (60–70 cm)	–	–	–	–	–	6	6	–	–
Level 8 (70–80 cm)	–	–	–	–	–	4	4	–	–
Level 9 (80–90 cm)	–	–	–	–	–	–	–	–	–
Level 10 (90–100 cm)	–	–	–	–	–	6	6	–	–
Subtotal	–	–	–	1	1	56	58	–	–
Test Unit 8									
Level 1 (0–10 cm)**	–	–	–	–	–	17	17	–	–
Level 2 (10–20 cm)	–	–	–	–	–	3	3	–	–

Table 4-26, continued

Provenience	Biface	Gravers	Core Tool	Edge-modified Flakes	Core	Debitage	Artifact Totals	Burned Rock Counts	Burned Rock Weights (kg)
Level 3 (20–30 cm)	–	–	–	–	–	1	1	1	0.10
Level 4 (30–40 cm)	–	–	–	–	–	7	7	4	1.00
Feature 1 (40–48 cm)	–	–	–	1	–	4	5	43	8.00
Level 5 (40–50 cm)	–	–	–	–	–	5	5	5	0.25
Level 6 (50–60 cm)	–	1	–	–	–	5	6	2	0.25
Level 7 (60–70 cm)	–	–	–	–	–	7	7	2	1.00
Level 8 (70–80 cm)	–	–	–	–	–	17	17	–	–
Level 9 (80–90 cm)	–	–	–	1	–	27	28	2	4.50
Subtotal	–	1	–	2	–	93	96	59	15.10
Backhoe Trench 4 (170 cm)	1	–	–	–	–	–	1	–	–
Total	1	2	1	6	1	361	372	66	15.65

* mechanically removed

** contains recent items

41CV1557**Site Setting**

Situated at the confluence of House and Turkey Run Creeks, 41CV1557 encompasses T_{1a} and T_{1b} surfaces, which have experienced lateral erosion by the creeks. This disturbance is most apparent in the northeast portion of the site closest to the stream's confluence. To the west, the terraces have been cleared and are covered with grasses and forbs. On the eastern section of the site, the area is densely vegetated and supports a mixed riparian-juniper woodland and greenbrier understory. Site elevation is 240 m above mean sea level.

Previous Work

Mariah Associates originally discovered the site in May 1992 while conducting reconnaissance survey but did not formally record it until 14 May 1993 (site form on file, Cultural Resources Management Office, Fort Hood; Trierweiler, ed. 1994:A1584–A1586). Although the site dimensions were noted as 170x50 m, the western site boundary was considered tenuous because there were no exposures across the Holocene terrace.

The site subsumed T_1 and T_0 surfaces southwest of the confluence of House and Turkey Run Creeks, but the sediments were deposited primarily by House Creek. The T_1 surface rested 5–6 m above the channel of Turkey Run Creek. Lower deposits exposed in the cutbank along Turkey Run Creek were either Fort Hood or lower West Range alluvium (Nordt 1992), but identification was uncertain because reaching the uppermost deposits of the cutbank exposure was difficult. In general, this deposit consisted of an upward-fining, yellow brown alluvium, but the presence of two different colors of sediment suggested that flooding by both creeks contributed to the construction of this surface. Another, younger fill, presumably the upper West Range, was inset to and draped the sloping margin of the older fill. This darker and relatively fine-grained deposit was identified as, the T_0 , which lay 3–4 m above the bed of Turkey Run Creek.

Two burned rock features were discovered approximately 25 m apart in the cutbank of Turkey Run Creek. Both appeared to be encapsulated in the older, lower fill but were at different depths and were buried in different terrace deposits. Feature 1 consisted of a slab-lined, basin-shaped hearth that measured 25 cm long and 10 cm thick. It was found at ca. 425 cm

Table 4-27. Summary of cultural materials from Analysis Unit 2, 41CV1554

Provenience	Debitage
Test Unit 1	
Level 27 (260–270 cm)	–
Level 28 (270–280 cm)	3
Level 29 (280–290 cm)	1
Level 30 (290–300 cm)	–
Level 31 (300–310 cm)	3
Level 32 (310–320 cm)	1
Level 33 (320–330 cm)	3
Level 34 (330–340 cm)	1
Subtotal	12
Test Unit 4	
0–257 cm*	
257–270 cm	–
Level 28 (270–280 cm)	1
Level 29 (280–290 cm)	1
Level 30 (290–300 cm)	–
Level 31 (300–310 cm)	1
Levels 32–33 (310–330 cm)	–
Subtotal	3
Test Unit 6	
Levels 23–30 (220–300 cm)	–
Subtotal	–
Total	15

* mechanically removed

below ground surface and 100 cm above the channel. About 30 m downstream, one flake was exposed at the same elevation. Feature 2 was a hearth comprising ashy sediment, charcoal, and dispersed, fist-sized burned rocks. The profile revealed a shallow basin shape. The feature was 80 cm long, 20 cm thick, 250 cm below ground surface, and 100–200 cm above the channel. There was no surface visibility on the terrace surfaces because vegetation was dense, and erosion was the primary disturbance of the site. Because the site had the potential to yield intact cultural deposits, shovel testing was warranted.

On 26 May 1993, a crew excavated nine shovel tests to a maximum depth of 40 cm. One test yielded seven flakes at 10–40 cm, and three additional tests produced a total of five burned rocks at 20–30 cm. The four positive tests were situated on the east-northeast portion of the site. Based on depositional interpretations, the site appeared to contain multiple Archaic occupations buried in a rapidly aggrading floodplain environment. The shovel testing results sug-

gested that there might be intact cultural deposits in the upper 40 cm of deposits, and the buried features indicated that there were intact cultural deposits much deeper. The recommended testing to determine National Register eligibility consisted of a minimum of seven backhoe trenches and 8 to 12 m² of hand-excavated test units (Trierweiler, ed. 1994:A1586).

Southers (Fort Hood Cultural Resources Management Office) revisited the site as part of the Site Monitoring Program and assessed potential damage from dirt bikes (Kleinbach 2000). Examination of the site and the surrounding area revealed no trails or tracks that could be attributed to dirt bikes. The two previously recorded features were re-located and appeared unchanged, and the site area was videotaped.

Work Performed

There was no surface visibility at 41CV1557 because vegetation and grass cover were thick across the alluvial terraces. The only exposures occurred along the cutbanks of House and Table Rock Creeks, and these were re-inspected. The two hearths (Features 1 and 2) originally recorded in 1993 were rediscovered. Erosion and bioturbation had further affected both features, as displaced burned rocks and changes in overall dimensions indicated. In the vicinity of Feature 1, scattered burned rocks anddebitage were observed in the upper 50–60 cm of fill and on slumped portions of the cutbank. About 4 m upstream from Feature 2, an intact lens of burned rocks and scattered charcoal (later designated Feature 5) was discovered at ca. 150 cm.

On 7 February 2002, formal testing was completed at 41CV1557 (Figure 4-25). Three of four backhoe trenches exposed isolated burned rocks and a probable feature between 20 and 190 cm (Table 4-28). Six test units were excavated (Table 4-29). Three units started at the ground surface, but the upper deposits in the other three were removed during trenching or had been previously removed by cutbank erosion. A total of 3.77 m³ was hand excavated, and the test units were terminated at arbitrary depths.

Site Extent and Depth

The boundaries of 41CV557 are well defined by creek cutbanks on the north, east, and south

sides. The western site boundary, considered tenuous in 1993, remains undefined because the terraces extend hundreds of meters to the base of an upland slope. The site therefore has minimum dimensions of 230 m northeast-southwest by 130 m northwest-southeast, or 29,900 m². Artifacts and five discrete cultural features occur between ca. 10 and 420 cm.

Definition of Analysis Units

Several stratigraphically discrete components are buried in a thick alluvial deposit. The entire site is considered one analysis unit because no discrete components can be defined. Separable occupation zones or cultural components are undoubtedly present, but no diagnostic artifacts were recovered, and the two radiocarbon dates do not provide sufficient evidence to support separating materials into components at this time.

Excavation Results

The deposits revealed that the terraces previously identified as the T_1 and T_0 are actually the T_{1a} and T_{1b} . Except for Backhoe Trench 1, all of the excavations were placed on the higher T_{1a} surface. The sediments below the T_{1a} are equivalent to the Fort Hood alluvium, and the T_{1b} is comprised of West Range and Ford deposits (see Appendix B). Just more than half (27 of 49) of the levels excavated from the six test units were culturally sterile. Most of the cultural materials were associated with features (Table 4-30)

Five features were found buried in the T_{1a} (Table 4-31). Feature 1 was re-recorded but not excavated. Features 1 and 2 were basin-shaped hearths primarily composed of large, nonfossiliferous limestone slabs. The burned rocks were one to two layers thick, and both features contained charcoal. There was also some slightly oxidized soil toward the south end of Feature 1. Neither the feature nor the surrounding sediments produced artifacts. One charcoal sample collected from each feature was submitted for assay but found to be insufficient for radiocarbon dating. A second charcoal sample obtained from Feature 2 at 260 cm yielded a conventional radiocarbon age of 7260 ± 40 B.P. (Beta-167956; see Appendix A). Although this sample provided sufficient carbon for dating, the sample was small, and the very fine charcoal did not

undergo the normal pretreatment regimen (i.e., alkali extractions) because the materials would dissolve. The lack of pretreatment does not mean that the radiocarbon age is inaccurate, but it opens the possibility that modern contaminants could make the age somewhat too young.

Features 3 and 4 were about 6 m apart. They overlapped in elevation and appeared to be contemporaneous because they were buried in the same alluvial deposit. Feature 3 was a hearth that consisted of two rock layers with a flat base (Figure 4-26). All of the rocks measured less than 15 cm, and approximately 70 percent of these were less than 5 cm in size. Feature 4, a burned rock concentration, was comprised of one layer of burned rocks concentrated near the center of the test unit. Most rocks were fist-sized and smaller angular and tabular pieces, but slabs measuring up to 15 cm were present. Most of the burned rocks consisted of nonfossiliferous limestone. There were chipped stone artifacts in and around both features. The excavation results and the cultural materials exposed in the upper 60 cm of deposits in the nearby cutbank suggested this living surface extends horizontally over an area of at least 10x10 m or larger.

Feature 5 is a dense lens of cultural materials averaging 15 cm thick and extending for approximately 3.5 m east-west in the cutbank of Turkey Run Creek. It represents an occupation zone that dips slightly from west to east and south to north. The burned rocks were one to two layers thick, and charcoal occurred between and beneath each rock. Tabular rocks measuring 10–12 cm in maximum size and very blocky, angular pieces were most common, but the matrix also contained thin slabs up to 20 cm in size. About half of the rocks were fossiliferous limestone. The feature fill produced a few stone tools, some debitage, and a dense amount of microfauna bone comprising recovered from flotation. Ninety-seven percent of the faunal assemblage consists of unidentifiable vertebrate fragments, but the rest of the remains are from the rabbit and hare family and one wood rat tooth (see Appendix C). Less than 1 percent of the bones show spiral fractures, but 66.7 percent are burned. Identified as an indeterminate wood, charcoal collected at 163 cm from Feature 5 yielded a conventional radiocarbon age of 7890 ± 40 B.P. (Beta-167186; see Appendix A).

For all practical purposes, Feature 5 appears to be associated with a refuse dump. It is likely

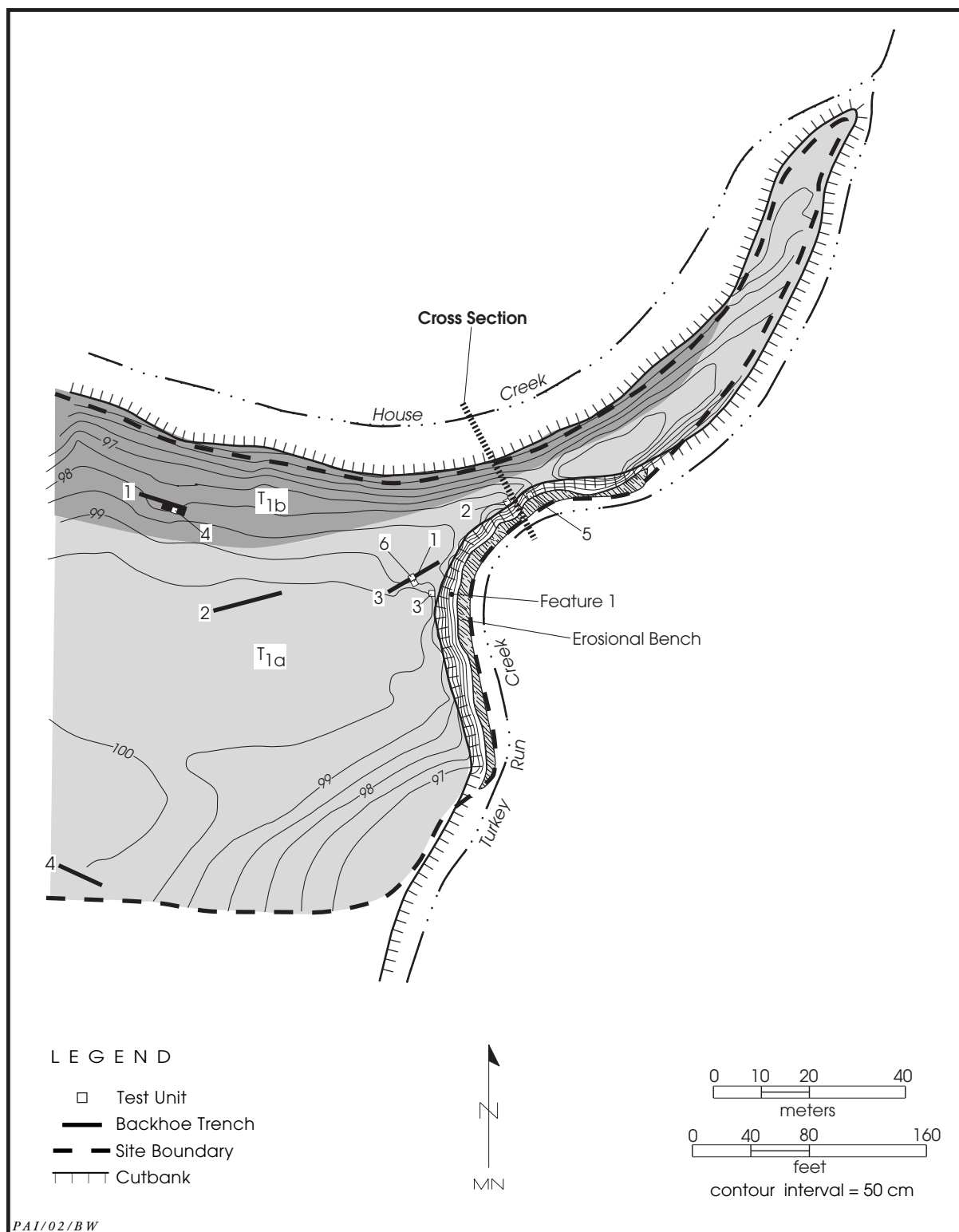


Figure 4-25. Map of 41CV1557.

Table 4-28. Backhoe trench summary, 41CV1557

Backhoe Trench	Maximum Dimensions	Setting	Cultural Observations
1	12.00 x 1.30 x 2.00 m	T _{1b}	burned rock at 190 cm
2	12.00 x 0.65 x 2.85 m	T _{1a}	burned rock at 25 cm
3	13.00 x 0.65 x 2.80 m	T _{1a}	probable burned rock feature at 20 cm; burned rock at 170 cm
4	9.00 x 0.65 x 2.70 m	T _{1a}	—

that the highly fragmented faunal remains from Feature 5 represent bones that were crushed and boiled to obtain bone grease. This phenomenon has been noted ethnographically (Binford 1978:159; Vehik 1977) and at many archeological localities in Texas (Boyd et al. 1993:193, 231; Johnson 1994:228; Quigg and Peck 1995:117–119, 167–168, 172) and elsewhere (Lintz 1976:87–88; Vehik 1977). Boiling bones to render bone grease does not leave evidence of direct heating, such as the charring observed on many of the fragmented bones from 41CV1557, but the burning could have happened before or more likely after the bones were boiled to extract grease. Lintz (1976:88) and Vehik (1977:170) note that placing bones over an open fire was one method of removing the periosteal sheath before crushing the bones for boiling, but the charring of bones would probably be accidental.

In at least one archeological case, bones used to render bone grease appear to have been intentionally discarded into fire pits, either simply to get rid of them or perhaps because the boiled bone fragments were still usable as fuel (Boyd et al. 1993:193). This seems a more likely scenario to explain the high frequency of burned bones in Feature 5.

Flotation samples retrieved from Features 2 through 5 did not yield identifiable charred macrobotanical remains, but charcoal flecks less than 0.5 mm were observed in samples from Feature 5 (see Appendix D).

Discussion

At 41CV1557, up to four distinct cultural occupations are buried in the Fort Hood alluvium that comprises the higher T_{1a} terrace. The fine-grained sediments and vertical separation of features and artifacts at the site suggest this was a rapidly aggrading depositional environment. Calibrated radiocarbon dates (2-sigma range) of 7020–6640 and 6620–6020 B.C. indicate that these remains represent late Paleoindian and Early Archaic occupations. Although the two dates are inverted stratigraphically, the younger and deeper dated charcoal sample could not be pretreated and may be somewhat too recent. The oldest date is associated with an occupation zone (Feature 5) containing dense cultural materials and is dominated by a large quantity of highly fragmented faunal remains that probably represent bones crushed and boiled to obtain bone grease.

The greatest current threat to the site is natural erosion of the stream cutbanks, especially the lateral northward and westward movement of a prominent meander bend in the Turkey Run Creek channel. The northeastern portion of the site, everything north and east of Backhoe Trench 3, is little more than a strip of T_{1a}, a terrace remnant that is only 4 to 8 m wide in most places (Figure 4-27). A significant portion of the alluvial terrace has already been stripped away by Turkey Run Creek, and the remaining portion could be easily destroyed in

Table 4-29. Test unit summary, 41CV1557

Test Unit	Dimensions	Beginning Elevation	Ending Elevation	Volume (m ³)	Features
1	1.00 x 1.00 m	surface	70 cm	0.63	Feature 3 at 18–31 cm
2	1.00 x 1.00 m	surface	190 cm	1.90	Feature 5 at 150–169 cm
3	1.00 x 1.00 m	surface	70 cm	0.65	Feature 4 at 20–27 cm
4	1.00 x 0.45 m	106 cm	160 cm	0.23	—
5	1.00 x 1.00 m	223 cm	300 cm	0.30	Feature 2 at 256–266 cm
6	1.00 x 0.60 m	187 cm	210 cm	0.06	—

Table 4-30. Summary of cultural materials from 41CV1557

Provenience	Bifaces	Miscellaneous Uniface	Edge-modified Flakes	Core	Debitage	Artifact Totals	Unmodified Bones	Burned Rock Counts	Burned Rock Weights (kg)
Test Unit 1									
Level 1 (0–10 cm)	–	–	–	–	–	–	–	–	–
Level 2 (10–20 cm)	2	–	–	–	6	8	–	6	0.30
Feature 3 (20–31 cm)	–	–	–	1	9	10	–	93	18.50
Level 3 (20–30 cm)	–	–	1	–	5	6	–	–	–
Level 4 (30–40 cm)	–	–	–	–	3	3	–	5	0.30
Level 5 (40–50 cm)	–	–	–	–	2	2	–	–	–
Levels 6–7 (50–70 cm)	–	–	–	–	–	–	–	–	–
Subtotal	2	–	1	1	25	29	–	104	19.10
Test Unit 2									
Levels 1–2 (0–20 cm)	–	–	–	–	–	–	–	–	–
Level 3 (20–30 cm)	–	–	–	–	–	–	–	2	0.10
Level 4 (30–40 cm)	–	–	–	–	1	1	–	1	0.10
Level 5 (40–50 cm)	–	–	–	–	–	–	–	1	0.10
Levels 6–13 (50–130 cm)	–	–	–	–	–	–	–	–	–
Level 14 (130–140 cm)	–	–	–	–	–	–	–	1	0.10
Level 15 (140–150 cm)	–	–	–	–	2	2	–	2	0.10
Feature 5 (150–169 cm)	1	1	–	–	31	33	736	50	19.00
Level 17 (160–170 cm)	–	–	–	–	–	–	–	3	0.10
Level 18 (170–180 cm)	–	–	–	–	1	1	–	2	0.10
Level 19 (180–190 cm)	–	–	–	–	–	–	–	–	–
Subtotal	1	1	–	–	35	37	736	62	19.70
Test Unit 3									
Level 1 (0–10 cm)	–	–	–	–	–	–	–	–	–
Level 2 (10–20 cm)	1	–	1	–	20	22	–	12	2.00
Feature 4 (20–27 cm)	–	–	–	–	6	6	–	26	6.50
Level 3 (20–30 cm)	–	–	–	–	7	7	–	4	0.50
Level 4 (30–40 cm)	–	–	–	–	4	4	–	4	0.25
Level 5 (40–50 cm)	–	–	–	–	1	1	–	1	0.10
Level 6 (50–60 cm)	–	–	–	–	1	1	–	–	–
Level 7 (60–70 cm)	–	–	–	–	–	–	–	–	–
Subtotal	1	–	1	–	39	41	–	47	9.35
Test Unit 4									
0–106 cm*									
106–110 cm	–	–	–	–	–	–	–	–	–
Level 12 (110–120 cm)	–	–	–	–	–	–	–	1	0.30
Levels 13–15 (120–150 cm)	–	–	–	–	–	–	–	–	–
Level 16 (150–160 cm)	–	–	–	–	–	–	–	2	0.20
Subtotal	–	–	–	–	–	–	–	3	0.50
Test Unit 5									
0–223 cm**									
223–230 cm	–	–	–	–	–	–	–	–	–
Levels 24–26 (230–260 cm)	–	–	–	–	–	–	–	–	–

Table 4-30, continued

Provenience	Bifaces	Miscellaneous Uniface	Edge-modified Flakes	Core	Debitage	Artifact Totals	Unmodified Bones	Burned Rock Counts	Burned Rock Weights (kg)
Feature 2 (256–266 cm)	–	–	–	–	–	–	–	3	5.00
Level 27 (260–270 cm)	–	–	–	–	–	–	–	10	1.50
Level 28 (270–280 cm)	–	–	–	–	–	–	–	2	3.50
Levels 29–30 (280–300 cm)	–	–	–	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–	–	15	10.00
Test Unit 6									
0–187 cm*									
187–200 cm	–	–	–	–	–	–	–	3	1.30
Level 21 (200–210 cm)	–	–	–	–	–	–	–	–	–
Subtotal	–	–	–	–	–	–	–	3	1.30
Total	4	1	2	1	99	107	736	234	59.95

* mechanically removed

** not present—cutbank erosion

a single high-velocity flood. The severity of the threat from stream erosion cannot be overstated, and all of the important cultural remains identified at 41CV1557 are located close to the stream cutbanks in the northeastern portion of

the site. The site is especially significant because it contains multiple components that are over 6,000 to 7,000 years old. Based on the testing results, 41CV1557 is recommended as eligible for listing in the National Register.

Table 4-31. Feature summary, 41CV1557

Feature No.	Feature Type	Location	Depth	Maximum Thickness	Excavated Dimensions	Estimated Dimensions	Time Period	Cultural Materials	Burned Rock Count	Burned Rock Weight (kg)	Disturbances
1	basin-shaped hearth	Turkey Run Creek cutbank	ca. 400–418 cm	18 cm	N/A	unknown	unknown	–	–	–	bioturbation, erosion
2	basin-shaped hearth	Turkey Run Creek cutbank; TU 5	256–266 cm	10 cm	50 x 30 cm	unknown	–	–	3	5.00	erosion
3	hearth	TU 1	18–31 cm	13 cm	83 x 66 cm	83 x 86 cm	unknown	core, debitage	93	18.50	–
4	burned rock concentration	TU 3	20–27 cm	7 cm	60 x 60 cm	unknown	unknown	debitage	26	6.75	bioturbation
5	occupation zone	Turkey Run Creek cutbank; TU 2	150–169 cm	19 cm	100 x 100 cm	unknown	Paleoindian/ Early Archaic	stone tools, debitage, bones	50	19.00	erosion

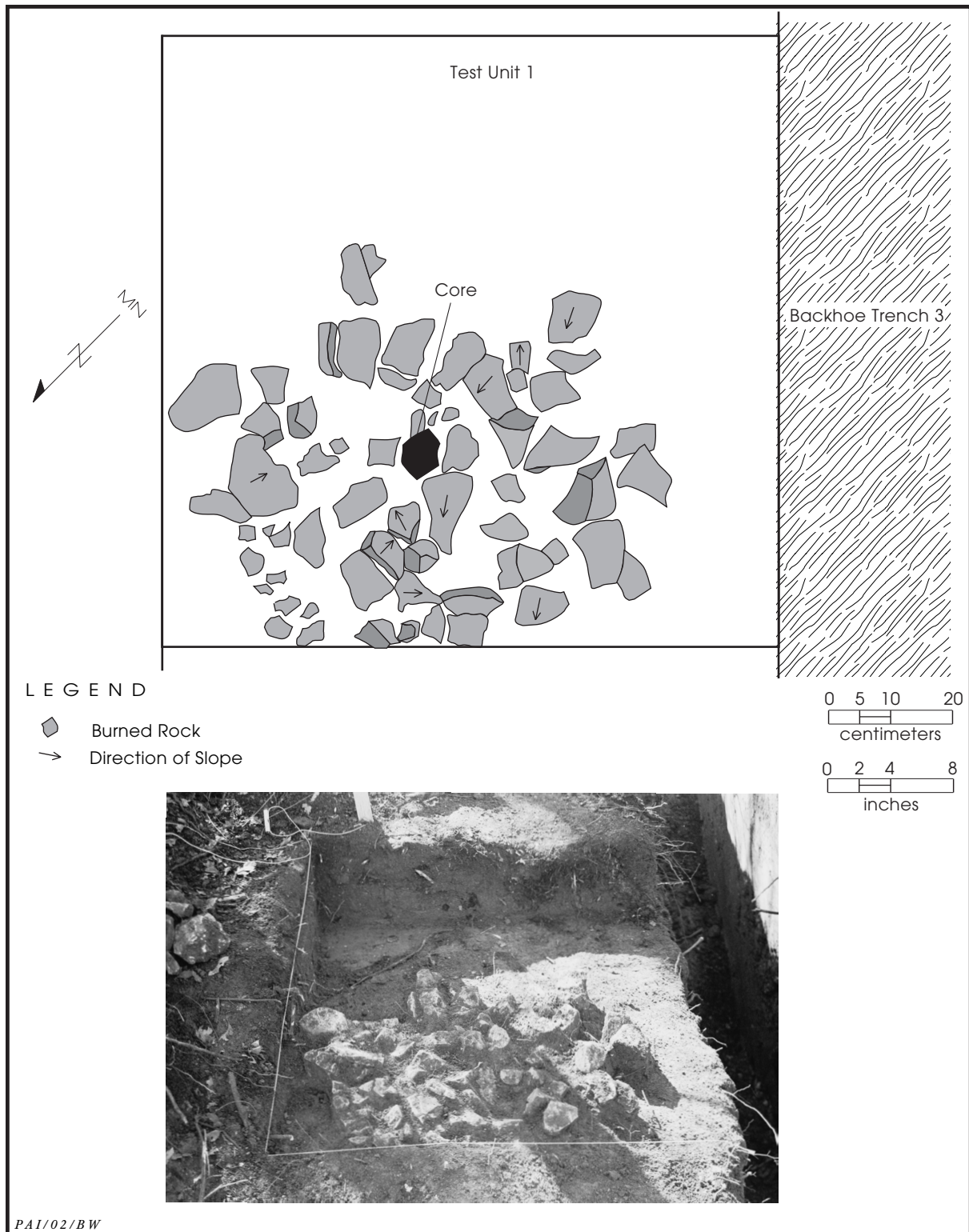


Figure 4-26. Plan and photograph of Feature 3, 41CV1557.

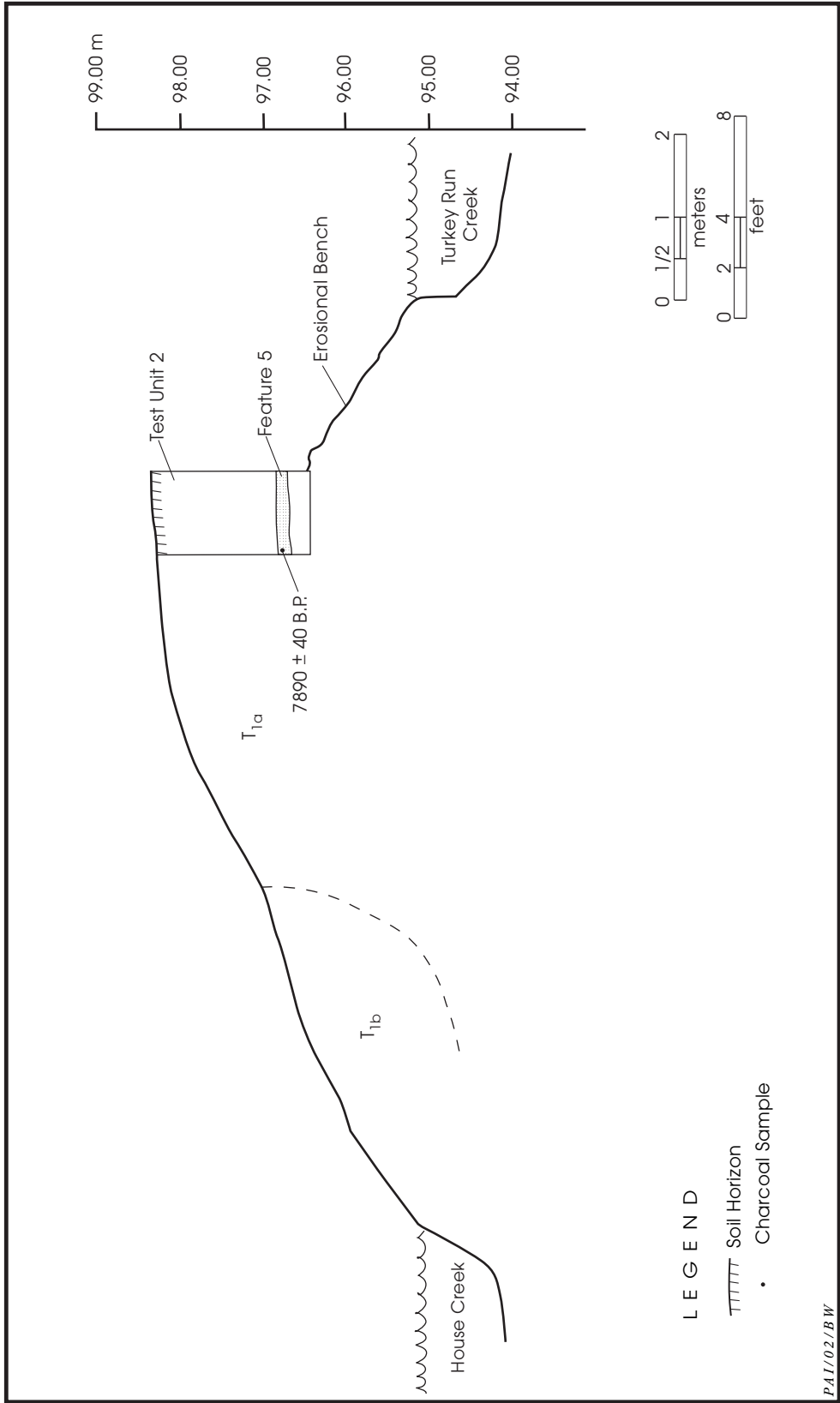


Figure 4-27. Measured cross section of the east end of 41CV1557, looking northeast.

CULTURAL MATERIALS RECOVERED

5

Gemma Mehalchick

All of the cultural materials recovered from the nine tested sites are discussed in this chapter. Artifacts consist of 8,842 chipped stone artifacts, 6 ground and battered stone artifacts, 1 other stone artifact, 1 modified bone, and 4 modified mussel shells (Table 5-1). Other cultural items are classified as unmodified bones (n = 915), unmodified mussel shells (n = 11), and burned rocks (total weight = 752 kg). Stone artifacts are further grouped by the lithic classes summarized in Chapter 3 (see Tables 3-1 and 3-2).

CHIPPED STONE ARTIFACTS

Approximately 97.2 percent of the chipped stone assemblage is comprised of debitage, followed by tools (2.6 percent), then cores and tested cobbles (0.2 percent). Most of the artifacts are manufactured from fine-grained cherts; 44.5 percent are qualitatively identified as locally occurring Edwards cherts based on taxonomies Abbott and Trierweiler (1995b), Dickens (1993a and 1993b), and Frederick and Ringstaff (1994) established. The named chert types dominating the assemblage are Fort Hood Yellow (n = 1,922; 21.7 percent) and Owl Creek Black (n = 783; 8.9 percent). Approximately 55.4 percent of the chert artifacts cannot be positively identified. Five quartz flakes make up 0.05 percent of the total unmodified debitage assemblage. Chris Ringstaff assigned the projectile points to type categories using morphological and technological characteristics Prewitt (1981), Collins (1998:322–324), Suhm and Jelks (1962), and Turner and Hester (1993) described. The 39 projectiles consist of 17 arrow points, 3 arrow point preforms, 17 dart points, and 2 unidentifiable specimens (Table 5-2).

Arrow Points and Preforms

Three sites—41BL788-A, 41CV1182-B, and 41CV1415—produced a total of 17 arrow points and 3 preforms (Table 5-3). Eight points correspond to named types, but the rest are untypeable.

Alba

One nearly complete specimen is 37.1 mm long but missing a barb and its distal tip (Figure 5-1). It has recurved, serrated blade edges and is unusually large for an Alba point. Another nearly complete point lacks one barb and is reworked.

Bonham

Two Bonham points consist of one nearly complete artifact and one proximal fragment (see Figure 5-1). Both have straight lateral edges and parallel-sided stems.

Scallorn

One complete specimen has prominent barbed shoulders, a straight base, and serrated blade (Figure 5-2). Although its lateral edges are straight, one edge is 2.07 mm longer. A second complete point is shallowly notched and has weak shoulders. This reworked artifact shows an alternately beveled blade. A third specimen consists of a nearly complete, reworked, squat point that is missing the tip of both barbs and displays a blade that is greater in width than length. The fourth artifact is a medial fragment with straight lateral edges, but one barb and a portion of the stem are snapped off.

Table 5-1. Summary of artifacts recovered

Site	Analysis Unit	Arrow Points	Arrow Point Preforms	Dart Points	Unidentifiable Projectile Points	Perforator	Early- to Middle-stage Bifaces	Late-stage to Finished Bifaces	Bifacial Knife	Miscellaneous Bifaces	End Scraper	Side Scraper	End-Side Scrapers	Miscellaneous Unifaces	Spokeshave	Cobble Tool	Gravers	Core Tools	Multifunctional Tools	Edge-modified Flakes	Cores	Tested Cobbles	Unmodified Debitage	Manos	Metates	Other (possible pitted stone)	Modified Bone	Modified Mussel Shells	Total	
41BL788-A	1	12	1	3	-	1	7	16	1	4	-	1	2	10	1	-	3	-	4	15	1	7	1,327	1	1	-	1	1	1,419	
	41CV93-B	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	6	-	-	-	-	-	7	
41CV760	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	28	-	-	-	-	1	31	
	1	-	-	9	2	-	3	20	-	2	1	-	-	1	1	1	-	-	1	18	2	3,681	2	-	-	-	-	-	3,743	
41CV769	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	15	-	-	-	-	-	-	16	
	1	-	-	2	-	-	4	6	-	2	-	-	-	1	-	-	-	-	1	7	1	1,330	-	-	-	-	-	-	1,355	
41CV1023-C	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-	5	
41CV1023-E	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	1	14	
41CV1182-A	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-	-	11	
41CV1182-B	2	3	1	2	-	-	-	5	-	2	-	-	-	5	-	-	1	2	-	8	2	1	1,195	-	-	-	-	-	1,227	
41CV1182-C	3	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	3	-	2	-	115	-	-	-	-	-	-	121	
41CV1182-D	4	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
41CV1415	1	2	1	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	3	-	395	-	2	1	-	1	1	410	
41CV1554	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	1	-	6	1	361	-	-	-	-	-	-	372	
	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	15	
41CV1557	1	-	-	-	-	-	1	2	-	1	-	-	-	1	-	-	-	-	-	2	1	99	-	-	-	-	-	-	107	
Total		17	3	17	2	1	16	55	1	11	1	1	2	19	1	1	1	6	6	6	64	14	2	8,596	3	3	1	1	4	8,854

Table 5-2. Summary of projectile points and preforms

Site	Arrow Points					Dart Points										Total			
	Alba	Bonham	Scallorn	Untypeable	Preform	Castroville	Darl	Elam	Ensor	Kent	Martindale	Montell	Thrall	Travis	Untyped (cf. Darl)		Untyped (cf. Thrall)	Untypeable	Unidentifiable
41BL788-A	2	-	4	6	1	-	1	-	-	-	1	-	1	-	-	-	-	-	16
41CV93-B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
41CV760	-	-	-	-	-	3	-	-	2	1	-	-	-	-	1	1	1	2	11
41CV769	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	2
41CV1182-B	-	2	-	1	1	-	-	1	-	-	-	1	-	-	-	-	-	-	6
41CV1415	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Total	2	2	4	9	3	3	1	1	2	1	1	1	1	1	1	1	3	2	39

Table 5-3. Classification and attributes of arrow points and arrow point preforms

Site	Nonmetric Attributes					Metric Attributes (mm)						
	Type	Completeness	Chert Type	Patination	Heating	Maximum Length	Blade Length	Blade Width	Haft Length	Neck Width	Base Width	Maximum Thickness
41BL788-A	Alba	nearly complete	Cowhouse Gray	light	low	19.5	13.2	–	6.3	5.9	5.4	3.0
	Alba	nearly complete	indeterminate mottled	light	low	37.1	–	–	7.0	6.3	6.5	3.4
	Scallorn	complete	indeterminate light brown	light	low	31.0	24.5	17.1	6.5	6.6	9.8	3.5
	Scallorn	complete	indeterminate dark gray	light	low	25.5	19.0	9.8	6.5	6.8	8.1	4.1
	Scallorn	nearly complete	indeterminate light brown	light	low	17.8	11.9	15.8	5.9	5.9	6.6	3.7
	Scallorn	medial fragment	indeterminate light brown	light	low	22.1	–	–	5.8	8.2	–	3.8
	untypeable	proximal fragment	indeterminate light brown	light	low	9.1	–	–	7.0	4.6	6.0	2.6
	untypeable	medial fragment	Texas Novaculite	none	low	27.9	–	18.0	–	5.6	–	3.6
	untypeable	medial fragment	indeterminate black	none	high	23.7	–	15.9	–	5.5	–	3.0
	untypeable	medial fragment	indeterminate dark gray	high	high	25.9	–	–	–	–	–	5.3
	untypeable	edge fragment	indeterminate light brown	high	low	16.6	12.9	–	–	–	–	1.2
	untypeable	edge fragment	indeterminate light brown	light	low	22.5	–	–	–	–	–	3.2
41CV1182-B	preform	proximal fragment	Texas Novaculite	none	low	21.1	–	–	–	–	19.7	3.0
	Bonham	nearly complete	Fort Hood Yellow	none	low	21.3	17.7	12.3	3.6	5.0	3.8	2.6
	Bonham	proximal fragment	Fort Hood Yellow	none	low	11.7	–	–	4.4	4.6	4.6	3.3
	untypeable	distal fragment	Fort Hood Yellow	light	low	17.9	–	–	–	–	–	2.4
	preform	distal fragment	Fort Hood Yellow	none	low	24.3	–	–	–	–	–	3.4

Table 5-3, continued

Site	Nonmetric Attributes					Metric Attributes (mm)						
	Type	Completeness	Chert Type	Patination	Heating	Maximum Length	Blade Length	Blade Width	Haft Length	Neck Width	Base Width	Maximum Thickness
41CV1415	untypeable	distal fragment	indeterminate light brown	none	low	28.7	24.6	—	—	6.5	—	4.1
	untypeable	distal fragment	indeterminate dark gray	none	high	21.6	17.1	—	—	7.0	—	3.3
	preform	proximal fragment	Fort Hood Yellow	none	low	19.4	—	—	—	—	11.6	2.9

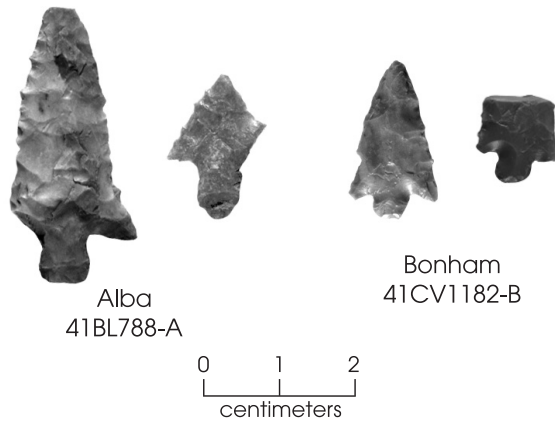


Figure 5-1. Alba and Bonham arrow points.

Untypeable

The nine untypeable arrow points consist of one proximal, three medial, three distal, and two edge fragments. The proximal piece is a narrow, slightly expanding stem with a concave base. All three medial fragments are lacking stems and distal tips, and two exhibit high heating. Straight lateral edges are apparent on two distal fragments, and one of these is heavily pitted. A third distal fragment has a serrated blade with recurved edges. Both edge fragments are serrated, but flaking on one is unifacial.

Preforms

Two proximal and one distal fragment constitute the arrow point preforms. One narrow, triangular proximal piece exhibits bifacial pressure flaking along slightly convex lateral edges.

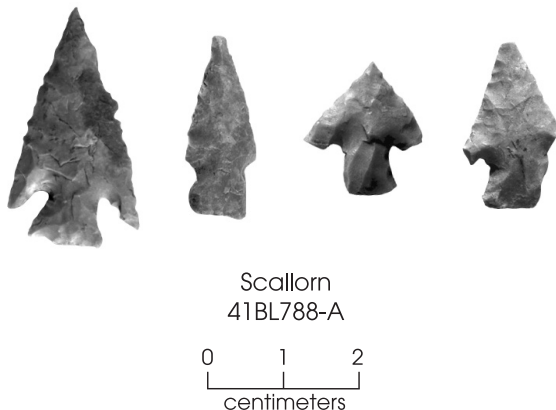


Figure 5-2. Scallorn arrow points.

The other two specimens have no distinguishing features.

Dart Points

Seventeen dart points were recovered from five sites, and 41CV760 produced more than half of them (Table 5-4). Fourteen dart points are diagnostic, with only 3 noted as untypeable.

Castroville

Three proximal fragments display straight bases and lateral edges, and one base has been ground (Figure 5-3). Barbs on each specimen are either missing or have been broken and reworked. Two points are highly patinated, but none exhibit evidence of heating.

Darl

The distal tip and a small corner of the base are snapped off this nearly complete specimen (see Figure 5-3). Although finely chipped, the point is somewhat thick (7.3 mm) and retains a minute amount of cortex.

Elam

This nearly complete, reworked artifact lacks the distal tip (see Figure 5-3). The parallel-sided stem, accounting for slightly more than one-third of the point's length, displays a concave base.

Ensor

Two Ensor points consist of proximal fragments with straight bases (see Figure 5-3). A lateral edge on each specimen appears serrated, and one artifact has indistinct shoulders.

Kent

The stem of this proximal fragment contracts slightly, and its lateral edges are ground (see Figure 5-3). There are several step fractures along one margin of the blade, suggesting difficulty in pressure flake removal.

Martindale

The specimen is a proximal fragment with

Table 5-4. Classification and attributes of dart points

Site	Nonmetric Attributes					Metric Attributes (mm)						
	Type	Completeness	Chert Type	Patination	Heating	Maximum Length	Blade Length	Blade Width	Haft Length	Neck Width	Base Width	Maximum Thickness
41BL788-A	Darl	nearly complete	indeterminate light brown	light	low	58.8	46.6	18.9	12.2	15.6	16.1	7.3
	Martindale	proximal fragment	indeterminate dark brown	high	low	38.1	—	27.4	9.0	16.7	21.8	8.3
	Thrall	proximal fragment	indeterminate dark brown	high	low	21.6	—	—	—	—	17.4	8.1
	unttypeable	medial fragment	indeterminate dark brown	high	low	38.6	—	—	—	—	—	6.0
41CV760	Castroville	proximal fragment	indeterminate light brown	high	none	49.1	—	31.6	10.3	19.7	20.5	6.5
	Castroville	proximal fragment	Fort Hood Yellow	none	none	44.6	—	42.8	11.1	21.6	24.4	7.2
	Castroville	proximal fragment	indeterminate light brown	high	none	39.5	—	—	13.0	22.2	23.4	6.2
	Ensor	proximal fragment	Owl Creek Black	none	low	24.3	—	22.9	8.8	12.7	21.4	5.4
	Ensor	proximal fragment	Owl Creek Black	none	none	24.1	—	—	7.7	15.9	18.8	6.4
	Kent	proximal fragment	Fort Hood Gray	light	low	32.4	—	22.7	15.9	15.5	14.2	7.9
41CV769	Untyped (cf. Darl)	proximal fragment	indeterminate dark brown	light	low	23.8	—	—	9.0	—	16.2	5.7
	Untyped (cf. Thrall)	complete	Fort Hood Yellow	none	low	55.2	35.2	23.6	20.0	25.5	21.7	7.6
	unttypeable	proximal fragment	Fort Hood Yellow	light	none	16.8	—	—	—	—	18.5	8.4
	Travis	complete	Indeterminate light brown	light	low	58.9	43.3	20.9	15.6	15.1	15.3	8.2
41CV1182-B	unttypeable	medial fragment	Fort Hood Yellow	light	none	47.5	—	—	—	—	—	4.5
	Elam	nearly complete	Fort Hood Gray	light	low	22.4	13.5	14.4	8.9	11.0	12.9	5.8
	Montell	proximal fragment	indeterminate red	none	low	31.9	—	—	14.8	25.1	—	5.7

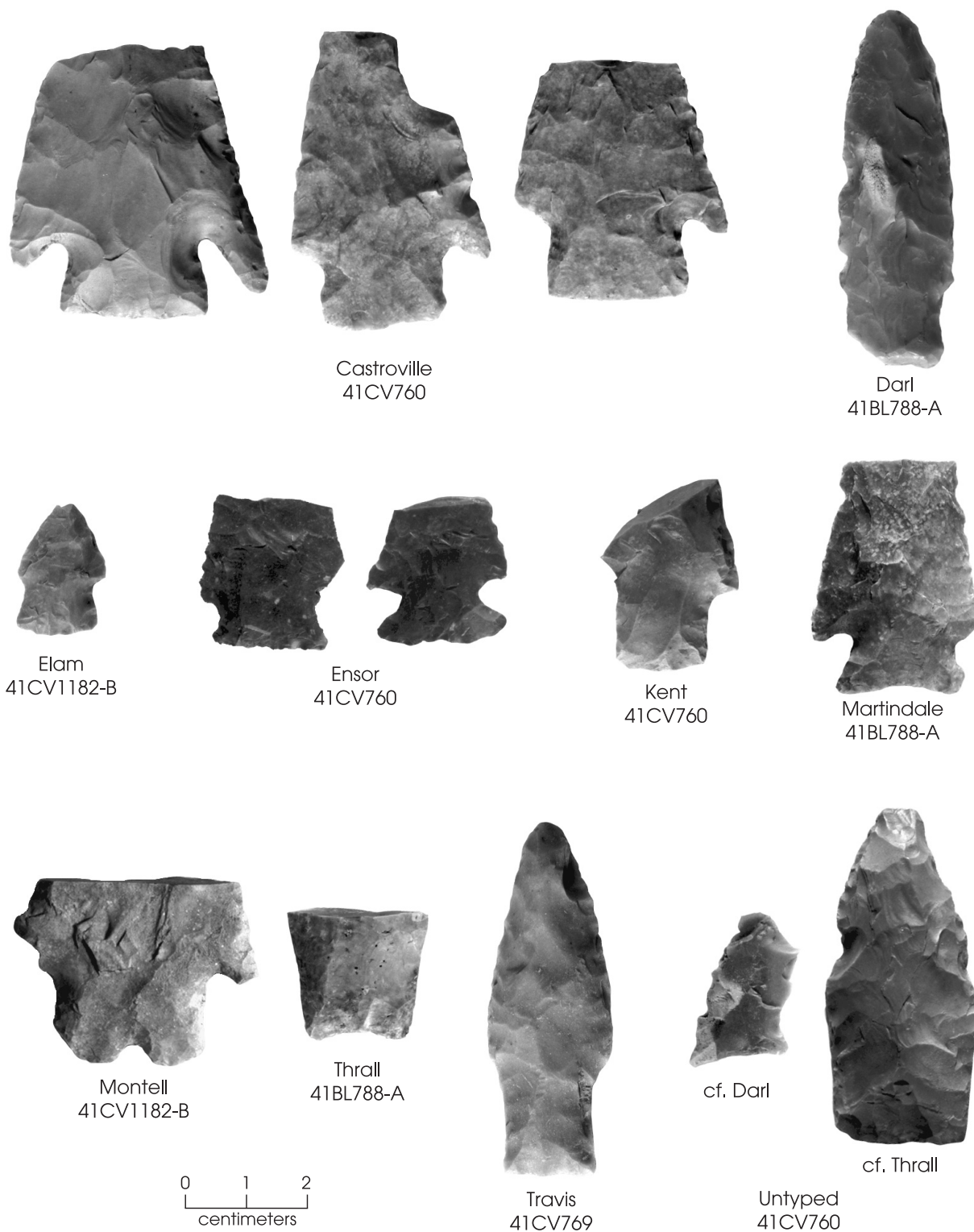


Figure 5-3. Dart points.

a lateral snap and ground base (see Figure 5-3). Overlapping hinge and step fractures beside a snapped barb suggest the corner could not be reworked. There are shallow, intentionally formed notches on opposite blade margins near the midpoint of the body. The notches presumably were added after the point was broken, but their intended function is unknown.

Montell

This proximal fragment exhibits a fairly shallow basal notch and portions of both barbs are broken off (see Figure 5-3).

Thrall

One highly patinated Thrall point consists of a proximal fragment with a ground base and stem edges (see Figure 5-3). Collins (1998:322–324, 481, 487) recently defined Thrall points based on specimens from the Wilson-Leonard site in Williamson County. Thrall points date between 8700 and 7000 B.P. and were previously described as Angostura points with fat stems.

Travis

This complete specimen displays a rectangular stem that is ground along all its edges (see Figure 5-3). The point has prominent shoulders, and the body is fairly thick (8.2 mm).

Untyped

One of two untyped dart points is a proximal fragment similar to a Darl (see Figure 5-3). This specimen consists primarily of the stem, which has a ground base. The second untyped dart point resembles a Thrall. It is thick (8.1 mm) but finely chipped, and its lateral stem edges are ground. Its distal end also appears to be reworked.

Untypeable

Three untypeable dart points comprise one proximal and two medial fragments. The proximal fragment shows ground lateral stem edges, and one medial specimen has an alternately beveled blade.

Unidentifiable Projectile Points

Two unidentifiable projectile points consist of one distal tip and one barb fragment. The distal tip is pitted due to intensive heating.

Perforator

The perforator consists of a small, bifacially flaked, triangular proximal fragment that is missing its entire bit.

Bifaces

The 83 bifaces (Figure 5-4; see Table 5-1) are divided into 16 early- to middle-stage (19.3 percent), 55 late-stage to finished (66.3 percent), 1 bifacial knife (1.2 percent), and 11 miscellaneous (13.2 percent). Table 5-5 categorizes biface completeness by type. Overall, 30.1 percent of the specimens are edge fragments, with distal fragments comprising 18.1 percent of the assemblage. The early- to middle-stage bifaces are crude and thick, but most have been shaped and retain less than 50 percent cortex (see Figure 5-4). Three display a battered or utilized edge. In general, the late-stage to finished bifaces are finely flaked and thin, but a few retain a plateau of step fractures on one surface that could not be further reduced (see Figure 5-4). Morphologically, they are usually triangular, lanceolate, rectangular, or ovate. Eight specimens reveal utilized lateral edges, and two have been ground on one margin. The bifacial knife is a recycled untyped dart point (see Figure 5-4). This nearly complete artifact has one recurved, utilized lateral edge that shows polish. The 11 miscellaneous bifaces consist of fragmentary pieces.

Unifaces

The 23 unifaces include 4 scrapers and 19 miscellaneous unifaces; most ($n = 11$) are complete specimens (Table 5-6). Three scrapers range from ovate to rectangular, and one end-side scraper lacks cortex. A highly patinated side scraper has a triangular outline; the distal end forms a point and both lateral edges are used (Figure 5-5). The miscellaneous unifaces consist of specimens too incomplete to be classified or otherwise unrecognizable as scrapers. Only one specimen has a utilized lateral edge, and most ($n = 15$) retain no cortex.

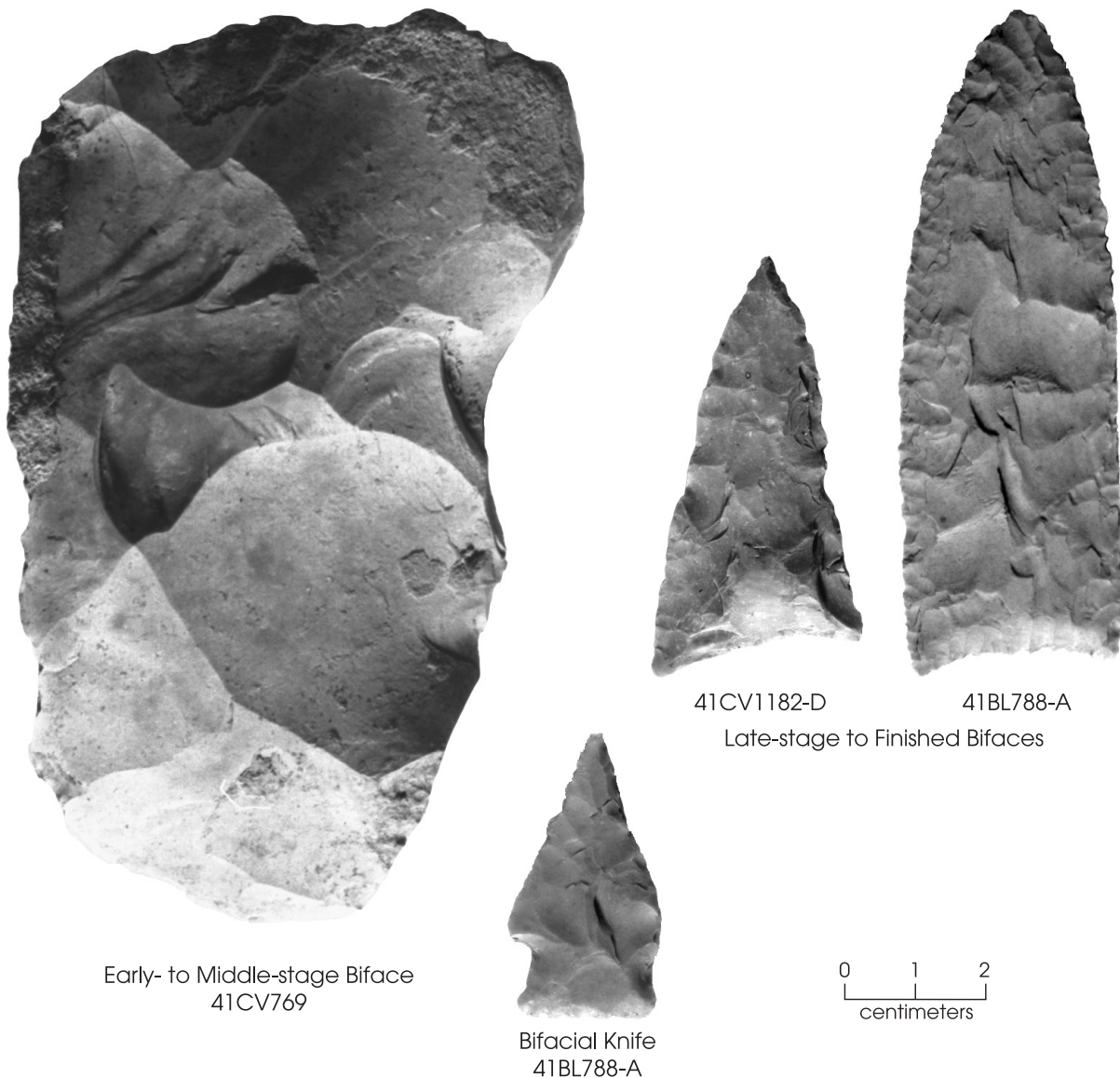


Figure 5-4. Bifaces.

Spokeshave

This expedient tool is a flake edge fragment with a unifacially worked notch.

Cobble Tool

This complete artifact consists of a stream-rolled cobble showing bifacial modification primarily of one end (see Figure 5-5). Battered edges evidenced by step and hinge fractures occur along its lateral margins. Most of the dorsal surface and distal end retain cortex.

Gravers

Six gravers manufactured on flakes were collected. One is nearly complete, three are complete specimens, and two are proximal fragments. Each tool has one pointed projection resulting from unifacial modification.

Core Tools

Five complete core tools and one distal fragment show battering along lateral or distal edges as indicated by many short step fractures. Most

Table 5-5. Summary of bifaces by completeness and type

Completeness	Early- to Middle-stage	Late-stage to Finished	Bifacial Knife	Miscellaneous	Total
complete	8	5	–	–	13
nearly complete	–	5	1	–	6
proximal fragment	2	11	–	–	13
medial fragment	–	8	–	1	9
distal fragment	2	13	–	–	15
edge fragment	4	13	–	8	25
indeterminate fragment	–	–	–	2	2
Total	16	55	1	11	83

are ovate or round, but a few smaller specimens are rectangular.

Multifunctional Tools

Of six multifunctional tools, four are combinations of a formal and expedient tool. One complete specimen is a finely chipped end-side scraper with a spokeshave at its proximal end (see Figure 5-5). A nearly complete artifact consists of a miscellaneous biface with a broken lateral edge reworked into a graver. One proximal fragment of a late-stage to finished biface exhibiting utilized lateral and basal edges has been burinated along one upper lateral margin. Another proximal fragment of a late-stage to finished biface has a lateral edge that functioned as a spokeshave. The two remaining specimens (one complete and one medial fragment) are expedient tools comprised of an edge-modified flake with a perforator or graver.

Edge-modified Flakes

Edge-modified flakes ($n = 64$) are the most common tool type. Complete or nearly complete specimens total 30, and 34 consist of various fragments dominated by 13 distal pieces.

Cores

Fourteen cores include 11 complete specimens and 1 distal, 1 edge, and 1 indeterminate fragment. Ten cores retain less than 50 percent cortex, two lack any cortex, and two have more than 50 percent cortex.

Tested Cobbles

The two tested cobbles are complete specimens that appear stream-rolled, show no evidence of heat treatment, and retain at least 50 percent cortex.

Unmodified Debitage

Unmodifieddebitage dominates the chipped stone artifacts, comprising 97.1 percent of the entire assemblage. A total of 8,596 flakes were recovered: 2,901 (33.8 percent) are complete, 1,718 (20.0 percent) consist of proximal fragments, 3,845 (44.7 percent) are comprised of chips, and chunks total 132 (1.5 percent). Eighty-eight percent of the specimens lack cortex, with 86.6 percent of these flakes ranging from 0.25 to 1.0 inch (Table 5-7).

Table 5-6. Summary of unifaces by completeness and type

Completeness	End Scraper	Side Scraper	End-Side Scrapers	Miscellaneous	Total
complete	1	1	2	7	11
nearly complete	–	–	–	2	2
proximal fragment	–	–	–	2	2
distal fragment	–	–	–	3	3
edge fragment	–	–	–	5	5
Total	1	1	2	19	23

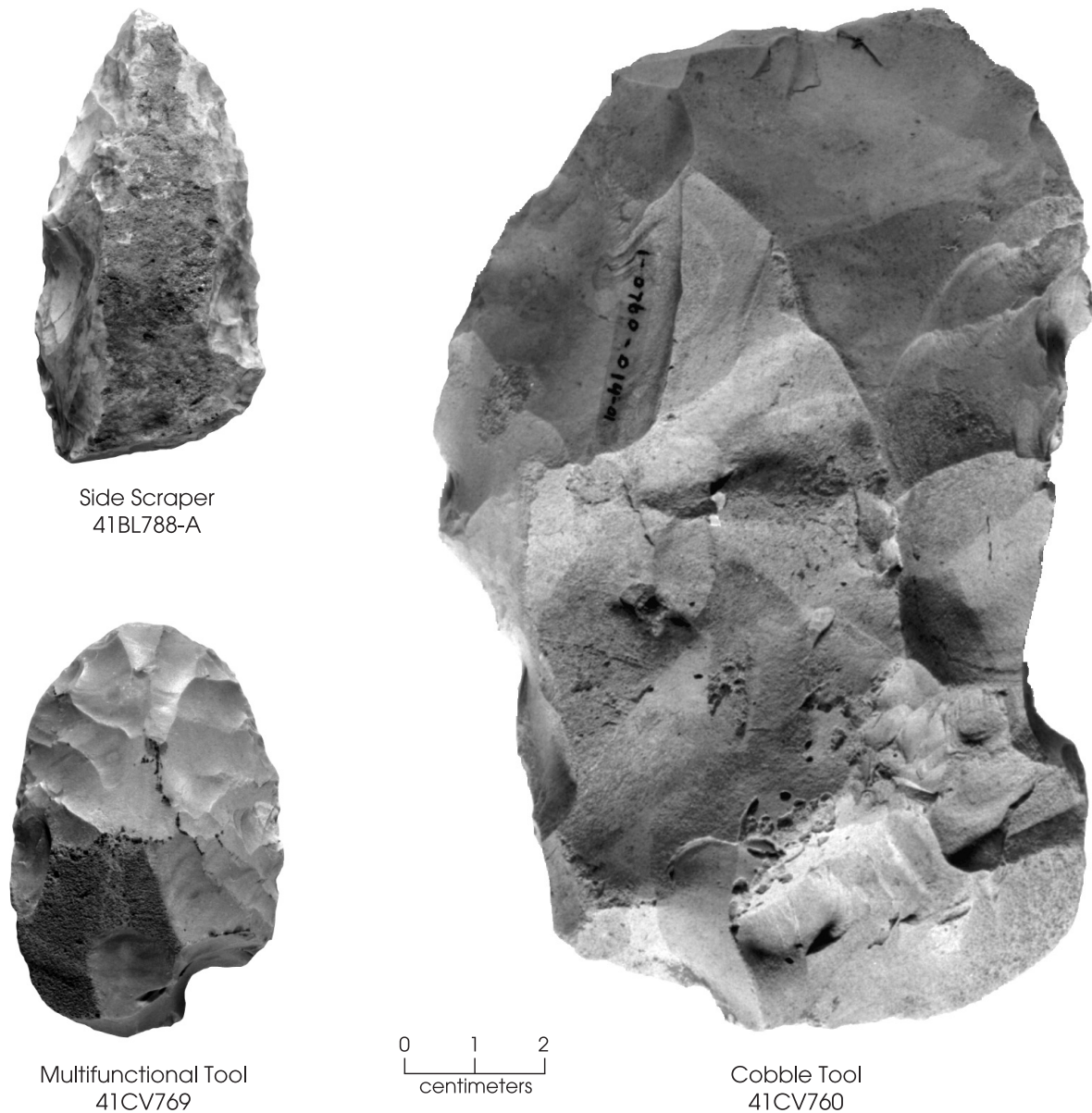


Figure 5-5. Chipped stone tools.

GROUND AND BATTERED STONE ARTIFACTS

Three manos and three metates constitute the ground and battered stone artifacts. One complete quartzite mano has been extensively shaped, measures 70.5x54.1 mm, and weighs 210 g. Its ventral surface and one edge are smooth from grinding. The other two manos are edge fragments made of limestone. Both show one grinding surface, but the smaller piece has been burned—that is, recycled—whereas the

larger fragment has not. All three limestone metates consist of edge fragments. One specimen measures 98.7x110.2 mm, and the whole surface on both sides is smoothed. A second metate has maximum dimensions of 160.9x129.5 mm. One entire face is ground and has a shallow depression measuring 41.3x30.7 mm. The third artifact is 165.9 mm long by 61.3 mm wide. Approximately half of one surface exhibits grinding, and the opposite face has a small pitted depression measuring 37.8x35.0 mm.

OTHER STONE

The other stone artifact is a possible pitted (or nutting) stone (Figure 5-6). This piece has maximum dimensions of 111.5x113.8x34.6 mm and weighs 357 g. It is a broken piece of burned limestone that has a 38.8x34.5 mm rounded depression near its center.

MODIFIED BONE

One unburned bone fragment, identified as a canid- to deer-sized mammal, is modified. Its exterior surface is smooth and highly striated, and one cut and rounded end exhibits striations perpendicular to those on the outer portion of the bone. The fragment measures 23.4x11.2 mm, and one lateral edge is worn and smooth. The function of this probable tool is unknown, and the striations may have been made during manufacture (i.e., intentionally created) or possibly are the byproduct of use.

MODIFIED MUSSEL SHELLS

Two of four modified mussel shells consist of unidentifiable valve fragments that have a triangular shape. One specimen has two cut edges, and part of the ventral margin is worn. The second artifact may have served as a scraper because its ventral margin is extremely worn and rounded, and the opposite edge has been purposefully smoothed after it was cut or broken (Figure 5-7). One nearly complete *Lampsilis teres* valve exhibits one small hole drilled from the exterior (see Figure 5-7). This mussel shell is probably an ornamental object. Approximately half of a large *Amblema plicata* valve is cut and notched

near the midsection of its body. This fragment measures 66.7x34.2 mm, whereas the irregularly shaped notch has maximum dimensions of 29.5x19.5 mm. Slight wear is present on the indentation, suggesting it was a suspension hole. The artifact may represent a broken pendant that was subsequently recycled.

UNMODIFIED FAUNAL REMAINS

Bones

A total of 915 animal bones represent 15 species or taxa (see Appendix C). Just more than 80 percent (n = 736) of the assemblage was recovered from 41CV1557, mainly because a large microfauna sample was collected from one feature. Only 9.1 percent (n = 83) of the specimens exhibit spiral fractures, whereas 59.3 percent (n = 543) are burned.

Mussel Shells

Eleven modified mussel shells were recovered from four sites. Site 41BL788-A produced eight mussel shells, and sites 41CV760, 41CV1182-C, and 41CV1415 yielded one specimen each. Eight mussel shells are identified as *Amblema plicata*, *Leptodea fragilis*, and *Quadrula apiculata*, but the other three are unidentifiable. Most shells comprise umbo fragments exhibiting fair to poor preservation.

Snail Shells

Rabdotus is the most common genus of unmodified snail shells found at the prehistoric sites. Whenever possible, a sample of complete *Rabdotus* snail shells (between 6 and 15) are collected for possible amino acid epimerization analysis and subsequent AMS radiocarbon assay. The snail shells are not considered to be cultural and were not quantified.

BURNED ROCKS

Burned rocks are the most common cultural materials, and the prehistoric sites produced a

Table 5-7. Summary of unmodified debitage by size and amount of remaining dorsal cortex

Size (inches)	Remaining Cortex				Total
	0%	1–50%	51–99%	100%	
< 0.25	87	3	0	0	90
0.25–0.50	11	19	12	2	44
0.50–1.00	3,830	156	37	20	4,043
1.00–1.50	2,725	310	78	32	3,145
1.50–2.00	808	187	62	8	1,065
> 2.00	112	68	26	3	209
Total	7,573	743	215	65	8,596



Figure 5-6. Possible pitted stone.

combined total of 752 kg of burned rocks. Almost three-fourths of the burned rocks are from feature contexts. The rest are in the general level matrix. All observed burned rocks are limestone and appear to be of local origin. The only characteristic distinguished was between fossiliferous (typically pink to bright red when fired and containing many fossils) and nonfossiliferous (usually gray-bluish gray to dull red when burned and containing few inclusions) limestones from different sources. Burned rocks are quantified in each site module (see Chapter 4).

MACROBOTANICAL REMAINS

Fourteen of 94 collected charcoal samples and all 60 processed flotation samples were submitted to the Paleoethnobotanical Laboratory at Texas A&M University for macrobotanical analysis (see Appendix D). The samples were collected from feature and general level contexts at nine sites or subareas. Fifteen taxa are identified and consist of wood, nutshell, acorn, and seed, as well as indeterminate bulb fragments.

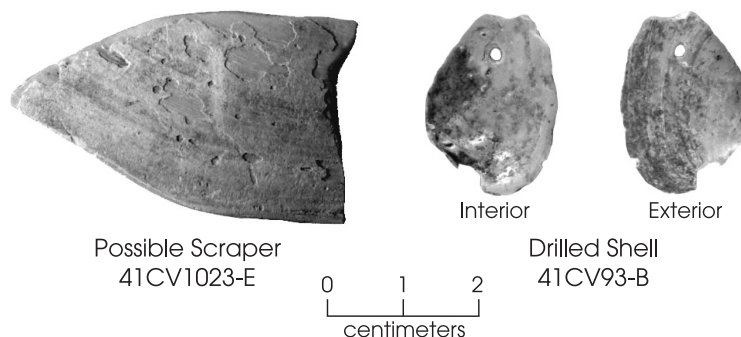


Figure 5-7. Modified mussel shells.

SUMMARY AND INTERPRETATION OF GEOARCHEOLOGICAL DATA

6

Gemma Mehalchick

Table 6-1 summarizes the prehistoric occupations identified at the 13 formally tested at 9 subareas. These cultural deposits span the late Paleoindian through Late Prehistoric periods based on chronometric data and stratigraphic context of the buried cultural deposits. The first section of this chapter briefly discusses five sites with discrete cultural components. Next, all occupations and material culture from a small sample of eligible sites along House Creek are characterized, then an overview of the eligible sites situated next to Owl Creek is presented. House and Owl Creeks are particularly noteworthy because these valleys preserve cultural deposits spanning the entire central Texas chronology.

Sites 41BL788-A and 41CV760 have some similarities even though they are about 30 km apart and 41BL788-A is situated on a slope and 41CV760, on a terrace. Each site contains a burned rock midden that accreted during the Late Archaic and Late Prehistoric periods. The spatially discrete features are confined to a well-defined landform, originate at the surface, are up to 40 to 50 cm thick, overlie dense gravels, contain abundant cultural materials, and yielded macrobotanical remains. Although the features were looted in the past, sizable portions of each remain intact. The testing results indicate the general midden matrices at 41BL788-A and 41CV760 are not atypical when compared to most midden deposits sampled on the installation (Boyd et al. 2000:41–42, 45). But 41CV760 is one of two sites (along with 41CV117-C) on Fort Hood where general midden deposits have produced charred geophyte bulbs that represent plant foods prehistoric peoples used.

The partially collapsed rockshelter comprising 41CV1023-E yielded a Late Prehistoric

period, Toyah phase occupation consisting of two well-defined features and an associated cultural assemblage. The time of occupation fits well with the chronology established for many of the rockshelters on Fort Hood and central Texas (Boyd et al. 2000:46–47; Mehalchick and Boyd 2001:Table 7.3). Previous investigations of rockshelters on the military base indicate they occur along the edges of the high upland Manning surface, and external deposits are typically eroded from the upland (Abbott 1995b:835; Boyd et al. 2000:46; Nordt 1992:Figure 3). What is unusual about 41CV1023-E is its location beneath a limestone rim on the lower upland Killeen surface and the presence of Ford alluvial deposits inside the shelter. Wherever these karst features occur, they appear to form in the same manner—through spring sapping and erosion of the limestone—and were commonly inhabited by prehistoric peoples.

A thin, stratigraphically discrete component is buried at 41CV1182-C, a campsite within the upstream reaches of Browns Creek. The archaeological deposit includes a rock-lined cooking pit and ubiquitous cultural materials corresponding to the Late Archaic to Late Prehistoric transition. One other eligible site, 41CV495-B, is located nearby on Browns Creek and contains transitional Middle to Late Archaic and Late Archaic components based on discrete zones of burned rocks and lithic artifacts within a 20x10-m area.

Site 41CV1415 is a multicomponent, intensively occupied Paluxy site. Geomorphological and archaeological work conducted at several Paluxy sites reveal these localities are used primarily during the Late Archaic through Protohistoric periods (Mehalchick 2000:335–338; Boyd, Mehalchick, and Kibler 2002:Figure 9–5).

Table 6-1. Summary of cultural occupations at sites tested during the 2001–2002 field season

Site	Analysis Unit	Identified Periods of Occupation	No. of Features
41BL788-A	1	Late Archaic and Late Prehistoric (Austin phase)	1
41CV93-B	1	none defined	0
	2	Late Prehistoric (Austin phase)	2
41CV760	1	Late Archaic and possibly Late Prehistoric (recent radiocarbon assay)	1
	2	Late Archaic	0
41CV769	1	probably Early to Middle Archaic (no radiocarbon assays)	1
41CV1023-C	1	none defined	0
41CV1023-E	1	Prehistoric period (Toyah phase)	2
41CV1182-A	1	none defined	0
41CV1182-B	1	none defined	1
41CV1182-C	1	Late Archaic-Late Prehistoric transition	1
41CV1182-D	1	none defined	0
41CV1415	1	Late Prehistoric	8
41CV1554	1	probably Early to Middle Archaic (no radiocarbon assays)	1
	2	probably Paleoindian (no radiocarbon assays)	0
41CV1557	1	Paleoindian-Early Archaic transition; possibly Middle Archaic	5

Radiocarbon dates from two of the eight features at 41CV1415 provide evidence of Late Prehistoric occupations, but this does not mean the site was inhabited exclusively during this period. Common burned rock features, particularly cooking pits, and edible floral remains reveal the primary activities at Paluxy sites as seasonal plant gathering and processing. Intentional use of natural gullies has been demonstrated at Paluxy sites (Abbott and Trierweiler, eds. 1995:450–459; Kleinbach et al. 1999:104–111; Mehalchick, Kibler, et al. 2004: 75–78, draft), but this is most apparent at 41CV1415, where an in-filled gully channel measuring at least 300 m² contains several intact features at different depths in 160-cm-thick sediments. In some cases it appears that people concentrated their activities in the low-lying areas (i.e., gullies that were actively in-filling), perhaps because the thick sandy deposits were suitable for digging cooking pits.

HOUSE CREEK

Seven sites adjoining the trunk of House Creek have isolable prehistoric components (Figure 6-1). Situated along a 10-km stretch between the western boundary of Fort Hood and the western edge of the live fire range, most sites are on the south side of the drainage. As detailed in Table 6-2 and Figure 6-2, chronometric data obtained from archeological deposits buried in col-

luvial slopes, toeslopes, and T₁ terraces reveal the House Creek valley was occupied repeatedly from the end of the Paleoindian through Late Prehistoric periods (Kleinbach et al. 1999; Mehalchick, Kleinbach, et al. 2000; this report). Table 6-3 summarizes the cultural components and associated material culture from nine sites on House Creek investigated between 1996 and 2002. Although some of the cultural period assignments by the original investigators were based on 1-sigma calibrated dates, the period assignments in Figures 6-2 and Table 6-3 are all consistent and are based on 2-sigma calibrated dates.

The sample of tested sites allows general observations about the occupations along House Creek. Middle and Late Archaic components are well represented and fully or partially comprise 10 of 15 analytical units identified at the sites. Excluding one ash anomaly, 32 of 33 features are composed of burned rocks, and hearth features (n = 15) dominate. Chronometric data from middens, along with basin-shaped and flat hearths, suggests repeated, intensive use of the area from the Middle Archaic period through the Austin phase.

The samples suggest that material culture remained consistent through time, with each artifact category present in every cultural period. Within the stone artifact assemblage, 23 of 28 named chert types are identified (Table 6-4). The five chert types not represented in this

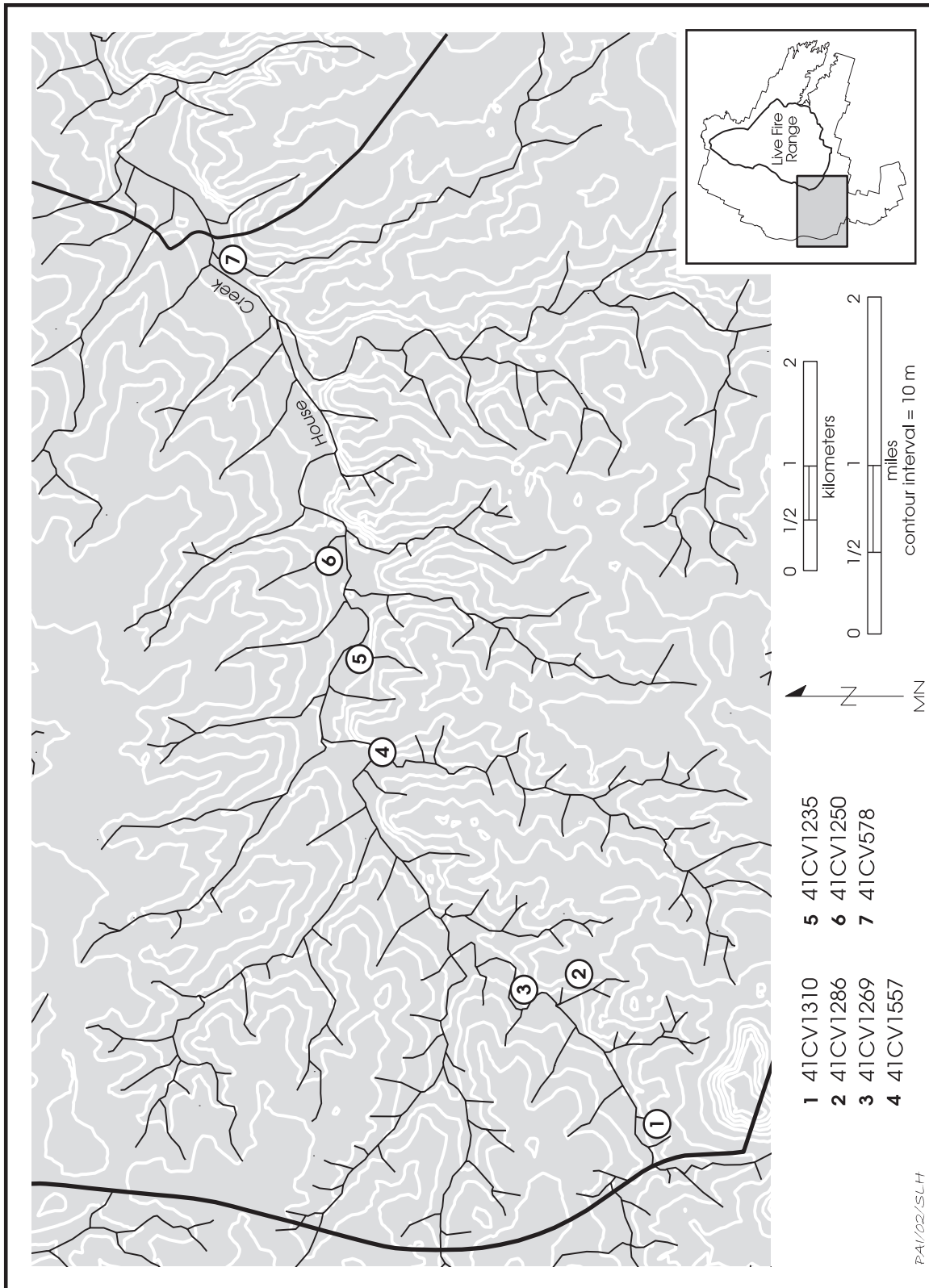


Figure 6-1. Archeological sites with defined prehistoric components along House Creek.

Table 6-2. Summary of radiocarbon dates from House Creek sites

Site	Calibrated Radiocarbon Date (2-sigma)	Feature No.	Feature Type
41CV578-A	3694–3384 B.C.	7	basin-shaped hearth
	2279–1946 B.C.	5	basin-shaped hearth
	A.D. 444–655	9	flat hearth
41CV1235	3515–3104 B.C.	3	burned rock concentration
	3361–2932 B.C.	7	basin-shaped hearth
	2879–2496 B.C.	5	occupation zone
	2467–2142 B.C.	1	burned rock midden
	1496–1223 B.C.	4	flat hearth
41CV1250-B	A.D. 689–956	5	basin-shaped hearth
	A.D. 780–998	7	basin-shaped hearth
	A.D. 1292–1432	4	occupation zone
41CV1269-A	798–414 B.C.	–	none—general excavation level
	2266–1922 B.C.	1	burned rock midden
	2285–1958 B.C.	3	basin-shaped hearth
	2297–1981 B.C.	5	burned rock concentration
41CV1269-B	816–522 B.C.	6	basin-shaped hearth
	A.D. 1220–1388	2	burned rock midden
41CV1286-C	A.D. 1414–1609	–	probable bison processing area
41CV1310-B	6221–5994 B.C.	9	basin-shaped hearth
41CV1310-C	A.D. 657–886	5	burned rock midden
	A.D. 1019–1245	5	burned rock midden
41CV1557	7020–6640 B.C.	5	occupation zone
	6220–6020 B.C.	2	basin-shaped hearth

sample are all secondary chert deposits that occur in Cowhouse Creek gravel bars. Anderson Mountain Gray is well represented in the chipped stone artifacts. This upland resource, located about 3 to 9 km from the main branch of House Creek, is ubiquitous in the Early and Middle Archaic components. The Late Archaic period exhibits the greatest chert diversity, with Heiner Lake Tan being the most common material. Although the primary source of Heiner Lake Tan is almost 20 km to the southeast, secondary deposits found in the channels of Cowhouse and Table Rock Creeks and in the vicinity of House Creek suggest a closer proximity for this resource (Abbott and Trierweiler, eds. 1995:Appendix I; Boyd 1999:363–380). Sparse Austin and Toyah phase assemblages are primarily composed of Fort Hood Yellow and Heiner Lake Tan, respectively. The number of Fort Hood Yellow specimens is not unusual when compared to other time periods indicating an influx of this chert from its main outcrop 20 to 25 km north-northeast, or again in gravel deposits of Cowhouse and Table Rock Creeks. In addition to Anderson Mountain Gray and Heiner Lake

Tan, Table Rock Flat is the only other chert identified in each discrete temporal period. Currently, Table Rock Flat is known from only one bedload locality that produces only limited numbers of workable cobbles (Abbott and Trierweiler, eds. 1995:Appendix I). But the unusually high frequency of Table Rock cherts in one site (41CV1269-B) could indicate that there is (or was) a primary source of this material close to the site or it might indicate that the occupants had access to another source of this material that is currently unknown and outside Fort Hood.)

In the faunal assemblage, animal bones prevail over mussel shells. The vertebrate remains are composed mainly of deer-sized and smaller game, with spirally fractured specimens indicating marrow extraction and small, pulverized fragments denoting grease rendering. Only two bison-sized elements are positively identified, and a bison processing area is extrapolated from a Toyah tool kit (particularly scrapers) and possible bison skull. One toad or frog and the sparse invertebrate remains hint at minimal exploitation of the aquatic resources, most likely reflecting the limited availability of

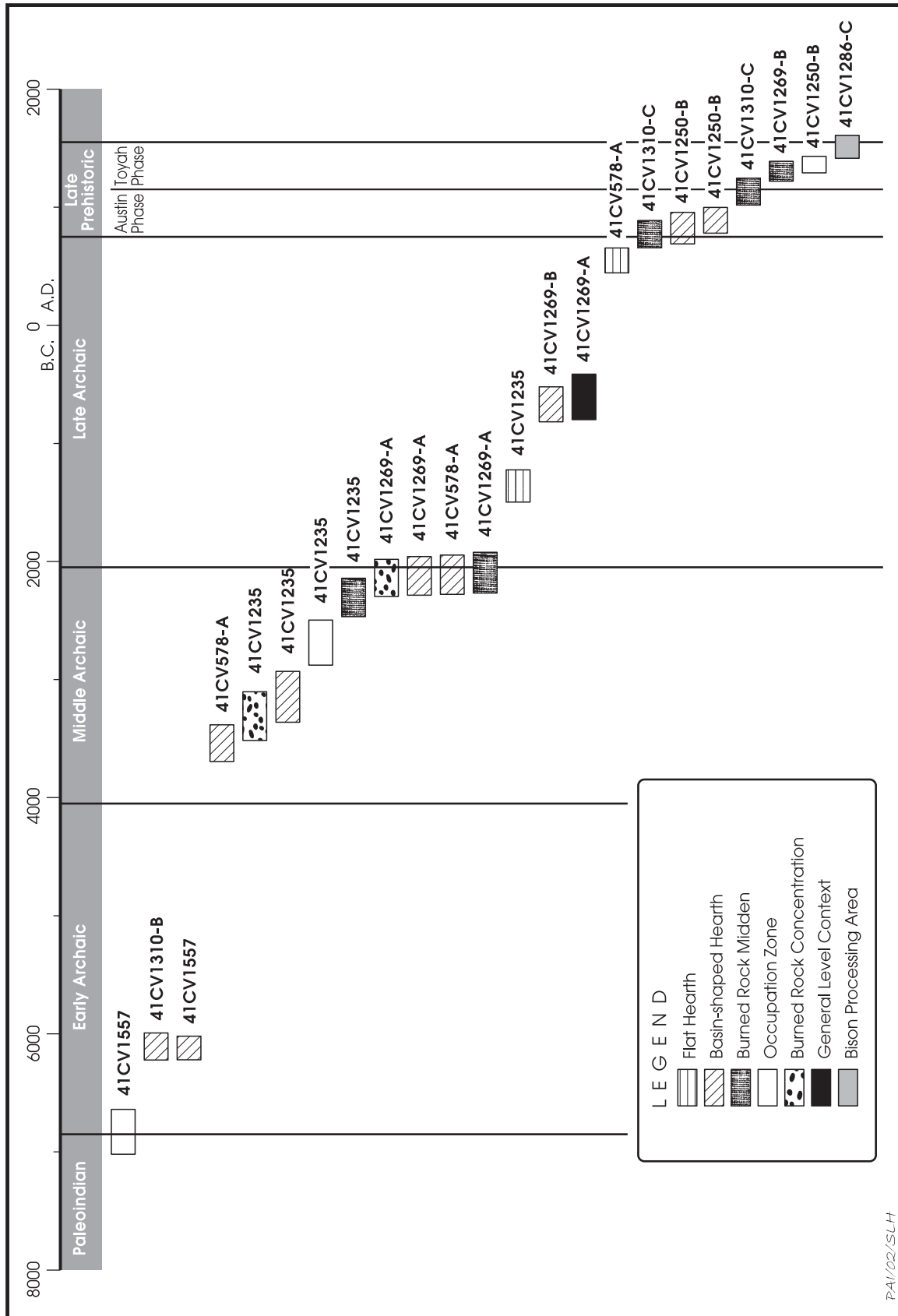


Figure 6-2. Comparison of calibrated radiocarbon dates from House Creek sites.

Table 6-3. Summary of cultural components identified at House Creek sites

					Cultural Remains										
Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Chipped Stone Artifacts	Ground Stone Artifacts	Bone Artifacts	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other	Fort Hood ARMS Research Report No.
41CV578															
Unit 1	Late Archaic	West Range	1	burned rock concentration, hearth	x	-	-	-	-	-	-	elm, oak	pecan and walnut shells, fruit fragments	-	38
Unit 2	Middle-Late Archaic (Middle Archaic)	Fort Hood and West Range	2	2 basin hearths	x	-	-	-	x	x	Darl	-	-	-	
Unit 3	probably Late Archaic	late Holocene colluvium	0	burned rock concentration, hearth	x	-	-	x		x	Baird, Darl, Pedernales	-	-	nonlocal chert	
41CV1235															
Unit 1	Middle-Late Archaic (Late Archaic)	West Range and late Holocene colluvium	2	hearth, midden, occupation zone	x	x	-	-	x	-	Castroville, Gower, Montell, Pedernales, Provisional Type 1	oak, willow	pecan shells	ground hematite, nonlocal chert	38
Unit 2	Middle Archaic	Fort Hood and late Holocene colluvium	3	basin hearth, 2 burned rock concentrations, occupation zone	x	-	-	-	x	x	Dawson, Travis, Pedernales, Provisional Type 1	-	-	-	

Table 6-3, continued

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.
					Chipped Stone Artifacts	Ground Stone Artifacts	Bone Artifacts	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other	
41CV1250-B															
Unit 1	Toyah phase	Ford	1	occupation zone	x	-	-	x	x	x	Cliffon, Scallorn	hackberry, oak, elm and willow family	-	ground hematite	38
Unit 2	Late Archaic-Austin phase (Austin phase)	West Range	2	3 basin hearths	x	-	-	-	x	x	-	oak, willow family	nut shells	-	
41CV1269-A															
Unit 1	Late Archaic	late Holocene colluvium	1	-	x	-	-	-	x	-	recycled Castroville	-	-	-	38
Unit 2	Middle-Late Archaic (Middle Archaic)	lower West Range	3	ash anomaly, basin hearth, burned rock concentration, midden	x	x	-	x	x	x	Pedernales, Provisional Type 1, Travis	juniper, oak	-	-	
41CV1269-B															
Unit 3	Late Archaic-Toyah phase	late Holocene colluvium	2	basin hearth, midden	x	-	-	-	x	x	Alba, Castroville, Edgewood, Marcos	juniper, oak, willow family	-	ground hematite	38

Table 6-3, continued

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.	
					Chipped Stone Artifacts	Ground Stone Artifacts	Bone Artifacts	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other		
41CV1286-C																
Unit 2	Toyah phase	Ford	1	-	x	x	-	-	x**	-	-	-	-	schist ground-stone, probable bison processing activity area	38	
41CV1310-B																
Unit 3	probably Late Archaic-Late Prehistoric	West Range and late Holocene colluvium	0	burned rock concentration	x	-	-	-	-	-	-	-	-		39	
Unit 4	Early Archaic	middle Holocene colluvium	1	basin hearth	x	-	-	-	-	-	-	-	-			
41CV1310-C																
Unit 2	Late Archaic-Late Prehistoric (Late Archaic-Austin phase)	West Range	2	burned rock concentration, 2 middens	x	x	x	-	x	-	Bonham, Ellis, Scallorn	oak	-	unmodified hematite	39	

Table 6-3, continued

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.
					Chipped Stone Artifacts	Ground Stone Artifacts	Bone Artifacts	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other	
41CV1557					x	-	-	-	x	-	-	-	-	-	
Unit 1	Paleoindian–Early Archaic transition–Early Archaic; possibly Middle Archaic	Fort Hood	2	2 basin hearths, burned rock concentration, hearth, occupation zone											this report

* All cultural period assignments are based on 2-sigma calibrated radiocarbon dates. Where noted in parentheses, the cultural period assignments made during the original investigation are different because they were based on 1-sigma calibrated dates.

** possible bison skull

Table 6-4. Summary of chipped stone assemblages from House Creek sites by chert type and cultural period

		Percent																								Total No.
		Heiner Lake Blue-Light	Cowhouse White	Anderson Mountain Gray	Seven Mile Mountain Novaculite	Texas Novaculite	Heiner Lake Tan	Fossiliferous Pale Brown	Fort Hood Yellow	Heiner Lake Translucent Brown	Heiner Lake Blue	East Range Flat	East Range Flecked	Fort Hood Gray	Gray-Brown-Green	Leona Park	Owl Creek Black	Cowhouse Two Tone	Cowhouse Dark Gray	Cowhouse Mottled with Flecks	Cowhouse Banded and Mottled	Cowhouse Brown Flecked	Cowhouse Novaculite	Table Rock Flat		
Cultural Period	Sites and Components in Sample																									
	Paleoindian-Early	41CV1557	0.0	6.7	62.2	2.2	0.0	6.7	0.0	6.7	6.7	2.2	0.0	0.0	0.0	2.2	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	
	Early Archaic	41CV1310-B	0.0	0.0	64.3	0.0	21.4	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	
Middle Archaic	41CV578		0.0	0.2	47.5	0.5	0.0	11.6	2.2	4.7	11.9	4.1	0.0	0.2	1.1	0.9	0.0	4.9	1.1	0.3	0.3	0.6	0.0	0.0	7.9	
	41CV1235 41CV1269-A																									
Late Archaic	41CV578 41CV1235 41CV1269-A		0.1	1.3	21.4	0.6	0.7	29.9	2.5	5.2	9.7	10.0	0.1	1.9	3.1	2.8	0.1	2.2	1.6	0.7	1.2	0.6	0.1	0.1	3.8	
Late Archaic-Austin phase	41CV1310-C		0.0	6.6	21.3	1.8	17.0	20.2	0.9	8.8	0.7	2.3	2.9	5.2	4.3	3.9	1.4	1.8	0.0	0.7	0.0	0.0	0.0	0.0	0.2	
Late Archaic-Austin phase	41CV1269-B		0.0	0.8	15.8	0.2	0.0	25.8	0.2	5.6	7.2	0.9	0.0	0.0	0.4	0.0	0.0	3.8	0.0	0.2	0.0	0.0	0.0	0.0	39.2	
	41CV1250-B		0.0	0.0	13.0	0.0	0.0	8.7	0.0	47.8	0.0	17.4	0.0	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	8.7	
Toyah phase	41CV1250-B		4.9	1.6	27.9	0.0	0.0	27.9	0.0	14.8	10.7	0.8	0.8	0.0	1.6	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	6.6	
	Total %		0.3	1.9	28.1	0.7	3.3	21.8	1.4	6.7	8.0	4.6	0.6	1.5	2.0	1.7	0.3	3.1	0.7	0.5	0.4	0.3	0.0	0.0	11.9	
Total No.			7	48	699	17	83	543	36	166	199	115	15	37	51	43	7	78	18	13	10	8	1	1	296	
																									2,491	

Note: Shaded cells represent samples that are more than 25 percent of the total.

certain faunal populations supported by House Creek.

The floral materials include oak, which is associated with each occupation in which charred wood occurs. Excluding willow, the wood charcoal consists of species that do not purely constitute riparian woodlands. Pecan and walnut shell fragments, as well as unidentified fruit fragments, provide evidence of potential plant foods. All of these remains are recovered from flat-bottom and basin-shaped hearths. The most productive features for macrobotanical remains consist of burned rock middens, all types of hearths, and occupation zones.

Imported materials such as nonlocal cherts, schist, and hematite are found with occupations post-dating the Middle Archaic period. Although hematite does not naturally occur on sites adjoining House Creek, it is available from Paluxy Formation exposures that bisect the creek from northeast to southwest.

OWL CREEK

A cluster of 15 sites containing discrete archeological deposits are located along the downstream portion of Owl Creek that extends approximately 5 km from the eastern edge of the live fire range to its confluence with Preachers Creek at the eastern boundary of Fort Hood (Figure 6-3). Except for 41CV769, all of the sites are south of Owl Creek where Holocene alluvial deposits commonly occur. Typically, only thin residual soils are preserved on the Pleistocene terraces and upland surfaces that characterize the area north of the stream. Radiocarbon assays reveal the presence of Paleoindian through Late Prehistoric components in Pleistocene (T_2) and Holocene (T_1 and T_0) terraces, toeslopes, and alluvial fans (Table 6-5; Figure 6-4; Carlson, ed. 1997; Mehalchick, Killian, et al. 2003; Trierweiler, ed. 1996; this report). Table 6-6 presents an overview of the cultural components, with revised temporal affiliations based on 2-sigma radiocarbon calibrations, or in the case of 41CV378, snail shell A/I ratios and depositional history.

Most of the defined components on Owl Creek post-date the Middle Archaic period, with especially intensive use of the area evident during the Late Archaic period and Austin phase. Of the 27 features identified at these sites, most are composed mainly of burned rocks. More than

50 percent of the features are hearths, and one-third are identified as burned rock middens. Notably, no single site along Owl Creek has produced both a hearth and a midden, but this probably is because of limited archeological sampling.

Paleoindian, Early Archaic, or Middle Archaic period components are represented by ephemeral features and chipped stone assemblages at five sites (41CV48, 41CV378, 41CV769, 41CV900, and 41CV1554). Most of these components have yielded only chipped stone artifacts, but Middle Archaic evidence at 41CV48 includes a burned rock midden with associated lithic artifacts and faunal remains. Conversely, Late Archaic and Late Prehistoric period components are abundant and have yielded a diversity of material culture.

An unusually high frequency of North Fort cherts (Frederick and Ringstaff 1994:154–155; Table 6-7) occurs in the chipped stone assemblages from Owl Creek sites. This appears to be true for virtually all time periods but should not be surprising given that the North Fort cherts are very near Owl Creek, and their raw forms are fine-grained, high quality materials. Specific North Fort chert types that occur in relatively high frequencies in the Owl Creek sites are Fort Hood Yellow, Gray-Brown-Green, and Owl Creek Black.

Animal bones and mussel shells coincide in many of the components, but bones outnumber shells in every case. Deer- and bison-sized mammals dominate the vertebrate remains from the Middle Archaic through Late Prehistoric periods. Sparse remains of rodent-sized mammal, turtle, coyote, and quail-sized bird are also present. Even though larger game is well represented in the faunal assemblages, the percentages of spirally fractured elements are low, and no modified or cut bones were recovered. Hearths, burned rock middens, and an occupation zone yielded all of the charcoal, with oak the most commonly identified wood. Evidence of edible floral remains—pecan shells, acorns, and legume seeds—was recovered from midden deposits and hearths (see Table 6-6).

Rare discoveries were made at two of the Owl Creek sites. First, Caddo engraved pottery sherds were found at 41CV41-A. On Fort Hood, a total of 12 pottery-bearing sites are known, and all are in or north of the Table Rock and Cowhouse Creek drainage basins (Perttula, Iruegas, and Neff 2002: Table 1). Second, human

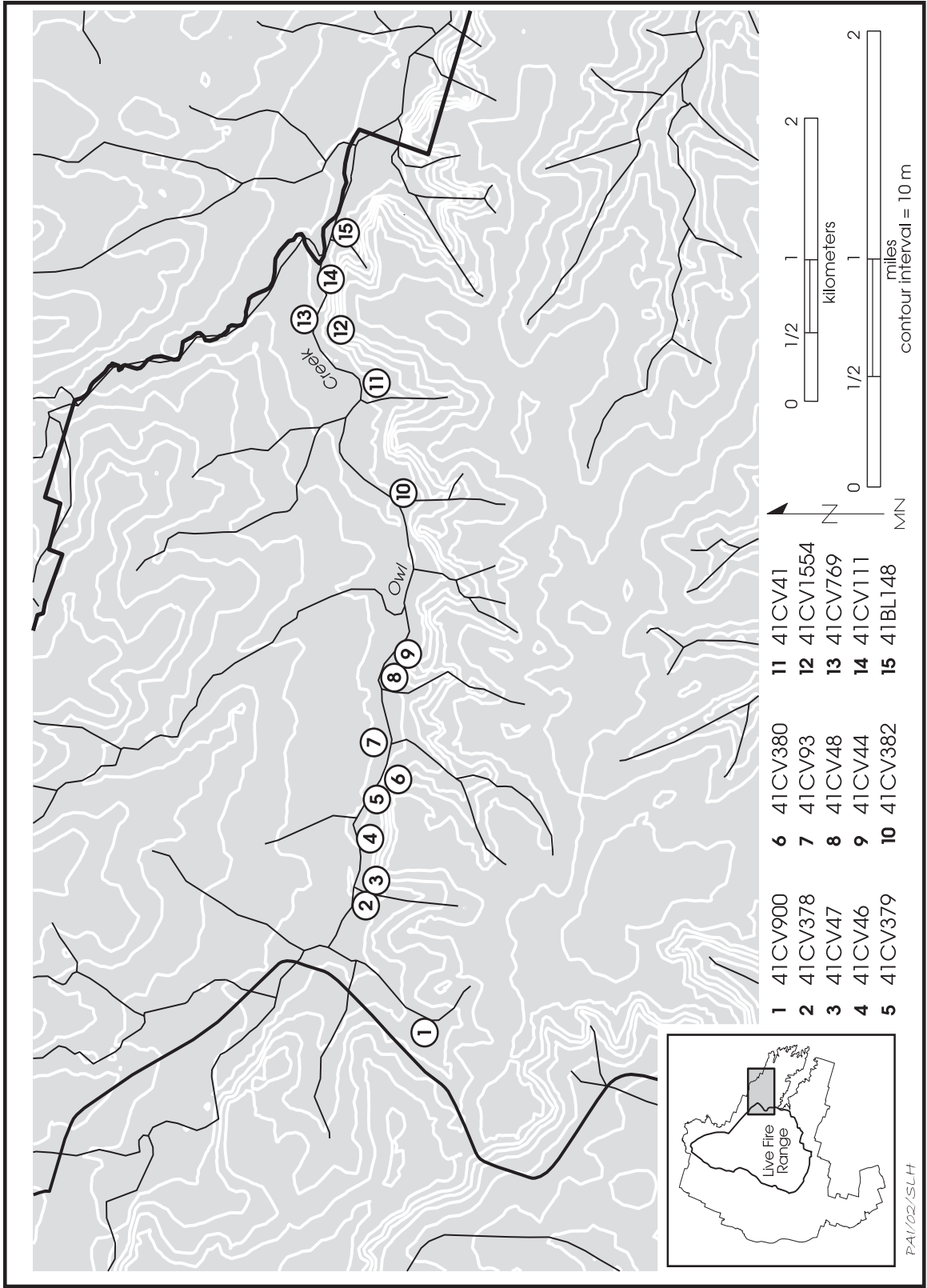


Figure 6-3. Archeological sites with defined prehistoric components along Owl Creek.

Table 6-5. Summary of radiocarbon dates for Owl Creek sites

Site	Calibrated Radiocarbon Date	Feature	
	(2-sigma)	No.	Feature Type
41CV41-A	518–259 B.C.	5	basin-shaped hearth
	171 B.C.– A.D. 76	none	no feature; general level context
	A.D. 603–772	1	basin-shaped hearth
	A.D. 779–1019	4	occupation zone
	A.D. 1190–1376	2	burned rock midden
	A.D. 1289–1428	2	burned rock midden
41CV44	A.D. 1002–1219	1	burned rock midden
41CV46	A.D. 218–426	1	burned rock midden
	A.D. 891–1206	none	no feature; general level context
41CV47	A.D. 1243–1394	1	burned rock midden
41CV48	2402–2038 B.C.	1	burned rock midden
	1940–1694 B.C.	4	burned rock midden
	A.D. 887–1275	3	burned rock midden
41CV93-B	A.D. 990–1160	2	basin-shaped hearth
41CV111	A.D. 386–1216	4	basin-shaped hearth
	A.D. 1334–1627	1	flat hearth
	A.D. 1530–1955	2	flat hearth
41CV379	A.D. 1652–1955	1	burned rock midden
41CV380	A.D. 662–893	1	burned rock midden
41CV382	195 B.C.– A.D. 408	2	occupation zone
	A.D. 30–340	5	basin-shaped hearth
	A.D. 1042–1283	3	basin-shaped hearth
	A.D. 1070–1385	1	basin-shaped hearth

remains were found near a large boulder situated on a colluvial toeslope at 41CV44. The association of an arrow point suggests the interment probably corresponds to the Late Prehistoric period. On the installation, primary and secondary burials commonly occur in rockshelters, but 41CV44, 41CV97-A, and 41CV413-B are the only open sites that have yielded human remains.

DISCUSSION

A quick comparison of the chronometric data for cultural components on House and Owl Creeks is revealing (Figure 6-5). For the sake of argument, it is assumed that the archeological methods employed to identify and test sites in these two valleys were comparable and that the features and components that were discovered truly represent the range of cultural remains that are preserved and archeologically accessible within each of these drainage systems. With this assumption acknowledged and made explicit, the next step is to examine the data to look for similarities and differences.

The visual display of radiocarbon dates and climatic interpretations immediately highlights a major difference in dating cultural components along House and Owl Creeks. Both creek valleys have occupations dating from the end of the Middle Archaic period through Late Archaic and Austin and Toyah phases, but the total absence of human occupations before 2,500 B.C. in the Owl Creek drainage is seemingly significant. The radiocarbon dates are misleading, however, because there are four more Paleoindian to Middle Archaic components buried in the alluvial fills in the Owl Creek valley for which no radiocarbon dates are available (see Table 6-6; this excludes 41CV900 because it is in an upland, nonalluvial setting). When these four early components are considered, the Owl Creek occupations extend back through the Middle and Early Archaic and into Paleoindian times, and the overall temporal distribution looks much more consistent with that of House Creek. There is no evidence to suggest that human use of these valleys should have been significantly different at any times in the past, and the valleys are geomorphically similar in many respects. In

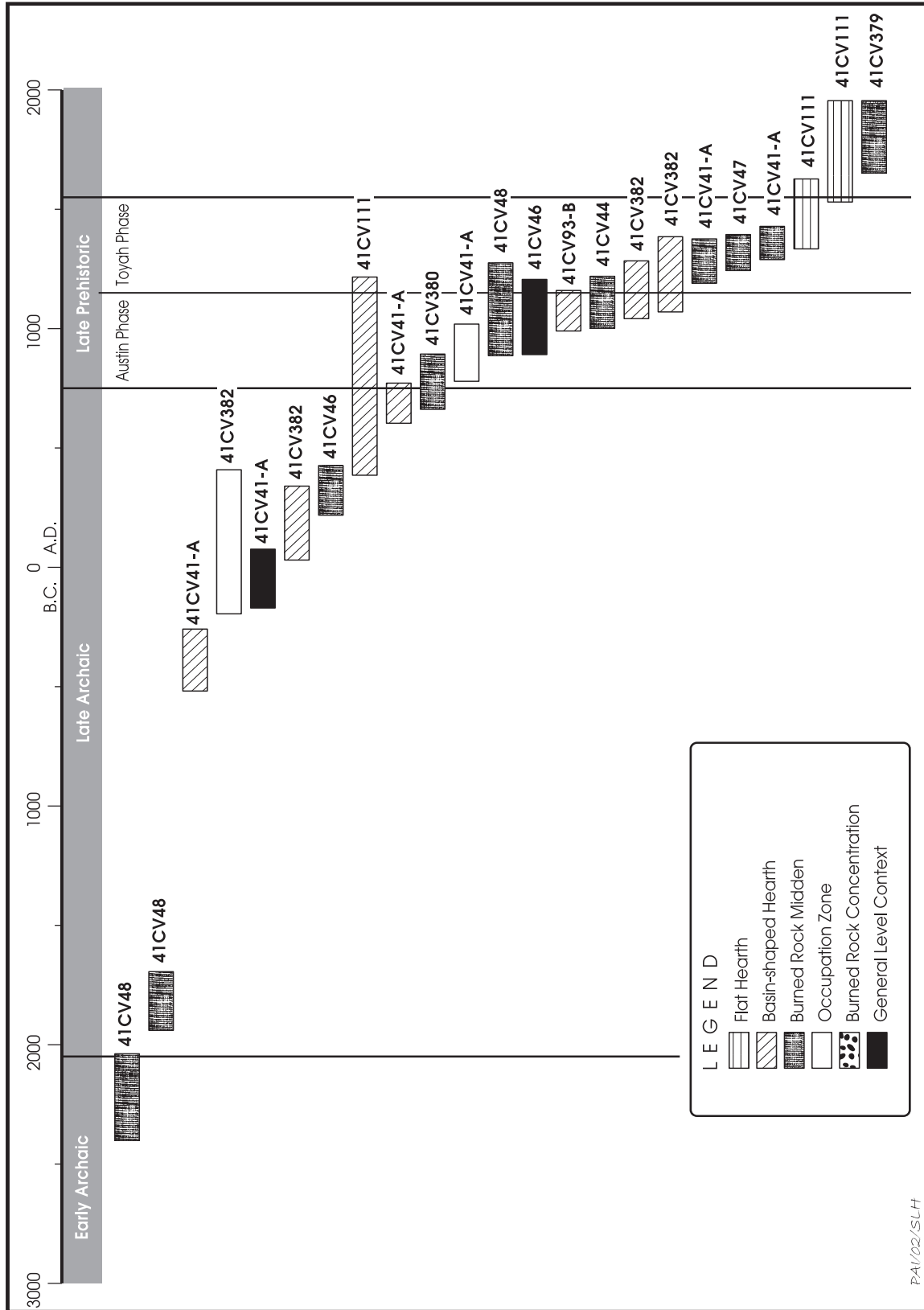


Figure 6-4. Comparison of calibrated radiocarbon dates from Owl Creek sites.

Table 6-6. Summary of cultural components identified at Owl Creek sites

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.
					Chipped Stone Artifacts	Groundstones	Ceramics	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other	
41BL148-A and -B	none defined	probably Late Archaic	0	none	x	x	-	-	x	x	dart, Ensor, Lange	-	-	-	29, 31
41CV41-A															
Unit 1	Late Archaic	West Range	1	2 basin hearths	x	-	-	?	x	x	arrow, Ensor, Provisional Type 1	-	-	-	44
Unit 2	Late Archaic–Austin phase	West Range	3	basin hearth, 2 occupation zones	x	-	-	-	x	x	dart, Ensor, Wilson	willow family	-	-	-
Unit 3	Late Prehistoric	West Range and Ford	2	midden	x	x	x	-	x	x	Granbury, Pedernales	oak	pecan shells	engraved Caddo sherds, possible Toyah pipe fragment	-
41CV44															
Unit 1	Late Archaic–Late Prehistoric (Late Archaic)	late Holocene colluvium	1	midden	x	-	-	-	x	x	dart, Ellis, Ensor, Lange	-	legume seeds	-	35
n/a	probably Late Prehistoric	unknown	0	none	x	-	-	-	x	-	arrow	-	-	human remains	

Table 6-6, continued

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.
					Chipped Stone Artifacts	Groundstones	Ceramics	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other	
41CV46	Late Archaic–Austin phase (Late Archaic)	late Holocene alluvial fan deposits	2	midden	x	–	–	–	x	x	Montell	oak	–	–	35
41CV47															
Unit 1	Late Prehistoric (Austin phase)	late Holocene colluvium	1	midden	x	–	–	–	x	x	Starr	oak	–	–	35
41CV48															
Unit 1	Middle Archaic–Late Prehistoric, Toyah phase (Middle)	Fort Hood, West Range, and Ford	3	3 middens	x	–	–	–	x	x	dart, Pedernales	juniper	–	–	35
41CV93-B															
Unit 2	Late Prehistoric, Austin phase	West Range	1	basin hearth, flat hearth	x	–	–	x	–	–	dart	oak, walnut	acorn	–	this report
41CV111															
none defined	Late Archaic–Late Prehistoric (Middle Archaic–Late Prehistoric)	West Range and Ford	3	basin hearth, 2 flat hearths	x	x	–	–	x	x	arrow, Bulverde, Castroville, Darl, dart, Ensor, Fairland, Lange, Marshall, Pedernales	–	–	–	29

Table 6-6, continued

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.	
					Chipped Stone Artifacts	Groundstones	Ceramics	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other		
41CV378																
Unit 1	Early Archaic (unknown)	Fort Hood	0	flat hearth	x	-	-	-	-	-	x	-	-	-	-	35
41CV379																
Unit 1	Late Archaic	late Holocene colluvium	1	midden	x	-	-	-	-	-	-	Frio	-	-	-	35
41CV380																
Unit 1	Late Archaic–Austin phase (Late Archaic)	late Holocene colluvium	1	midden	x	-	-	-	x	x	Darl, Lange	oak	-	-	-	35
41CV382																
Unit 1	Late Prehistoric (Austin phase)	West Range	2	2 basin hearths	x	-	-	-	x	x	Alba, arrow, Scallorn	ash, elm, juniper, oak, sumac	-	-	-	39
Unit 2	Late Archaic	West Range	2	2 basin hearths, occupation zone	x	-	-	-	x	x	Zephyr	juniper, oak, pecan, willow family	-	-	-	-
41CV769																
Unit 1	Early–Middle Archaic	Fort Hood	0	burned rock concentration	x	-	-	-	-	-	dart, Travis	-	-	-	-	this report

Table 6-6, continued

Site and Analysis Unit	Cultural Periods of Occupation*	Sediments Containing Cultural Deposits	No. of Radiocarbon Dates	Feature Types	Cultural Remains										Fort Hood ARMS Research Report No.
					Chipped Stone Artifacts	Groundstones	Ceramics	Mussel Shell Artifacts	Unmodified Bones	Unmodified Mussel Shells	Projectile Points	Charred Wood Remains	Charred Edible Plant Remains	Other	
41CV900-B and -C	none defined	Late Paleoindian–Early Archaic	0	none	x	–	–	–	–	–	Andice, dart, Gower, Hell Gap, Hoxie, Jetta, Meserve, Victoria	–	–	–	35; Fort Hood files
41CV1554															
Unit 1	Early–Middle Archaic	Fort Hood	0	flat hearth	x	–	–	–	–	–	–	–	–	–	this report
Unit 2	Paleoindian	Georgetown	0	none	x	–	–	–	–	–	–	–	–	–	–

* Original assignment. All cultural period assignments are based on 2-sigma calibrated radiocarbon dates. Where noted in parentheses, the cultural period assignments made during the original investigation are different because they were based on 1-sigma calibrated dates.

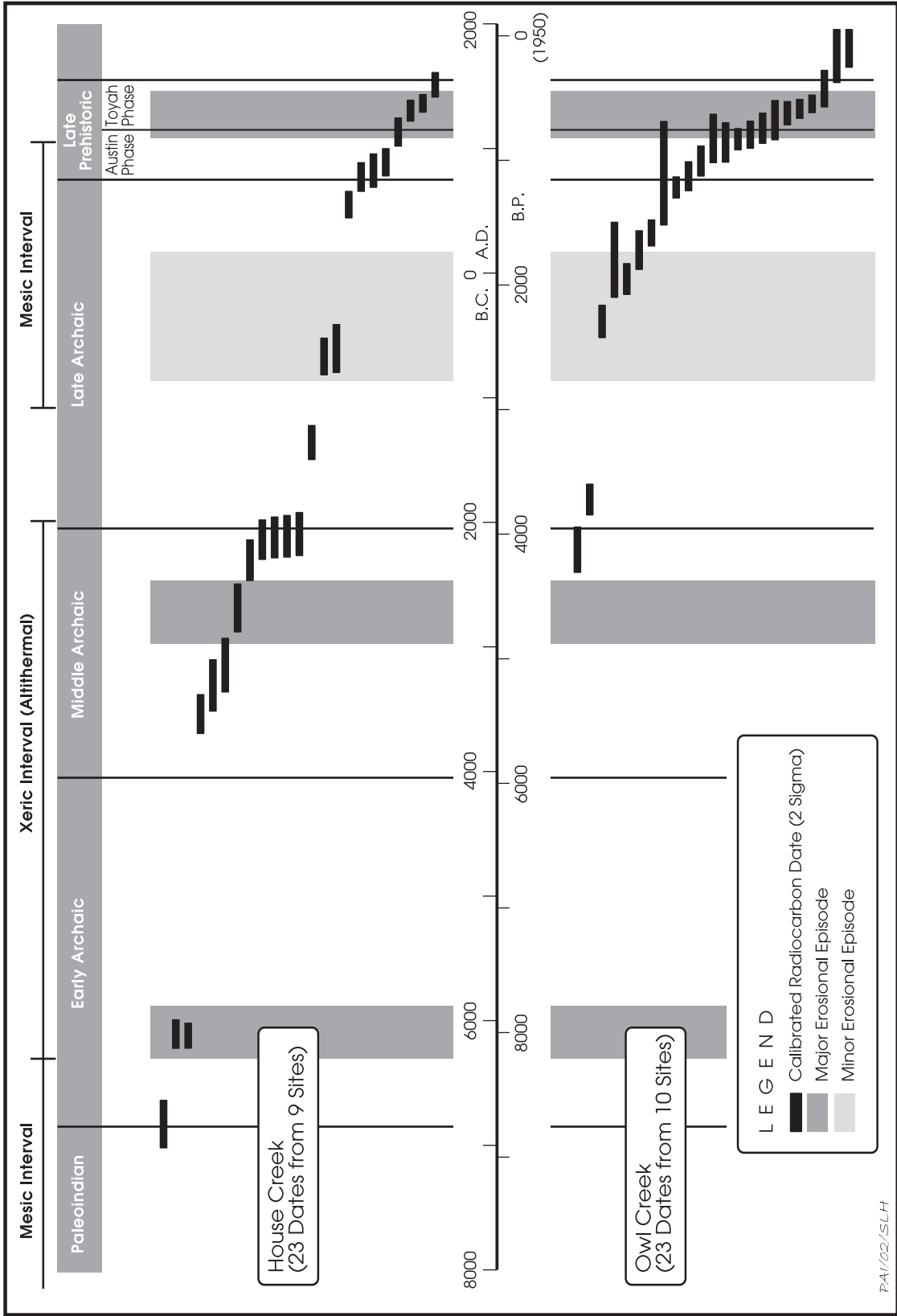
Table 6-7. Summary of chipped stone assemblages from Owl Creek sites by chert type and cultural period

	Percent																								Total No.
	Heiner Lake Blue-Light	Cowhouse White	Anderson Mountain Gray	Seven Mile Mountain Novaculite	Texas Novaculite	Heiner Lake Tan	Heiner Lake Tan and Blue*	Fossiliferous Pale Brown	Fort Hood Yellow	Heiner Lake Translucent Brown	Heiner Lake Blue	East Range Flat	East Range Flecked	Fort Hood Gray	Gray-Brown-Green	Leona Park	Owl Creek Black	Cowhouse Two Tone	Cowhouse Dark Gray	Cowhouse Mottled with Flecks	Cowhouse Banded and Mottled	Cowhouse Streaked	Table Rock Flat		
Sites and Components in Sample	Time Period	41CV1554	0.0	0.0	0.0	0.0	0.0	0.0	77.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0	9	
	Late Paleoindian–Early Archaic	41CV900-B and C	0.0	6.7	6.7	0.0	6.7	0.0	40.0	0.0	13.3	0.0	0.0	0.0	0.0	13.3	0.0	6.7	0.0	0.0	0.0	0.0	0.0	15	
Early Archaic	Early Archaic	41CV378	0.0	0.0	2.9	0.0	0.0	0.0	17.6	0.0	0.0	0.0	0.0	2.9	17.6	17.6	0.0	17.6	0.0	0.0	0.0	0.0	0.0	34	
	Early–Middle Archaic	41CV769	0.0	1.6	0.2	0.1	0.0	0.0	43.9	0.2	0.1	0.0	7.0	7.1	12.7	1.8	25.0	0.0	0.1	0.0	0.0	0.0	911		
	Middle Archaic–Late Prehistoric	41CV1554	0.0	0.0	0.0	0.0	0.0	0.0	10.1	0.6	0.0	0.0	0.1	2.7	72.2	0.0	10.7	0.0	0.0	0.0	0.0	0.0	3,213		
	Late Prehistoric	41CV48	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.4	1.9	1.7	22.2	18.5	0.4	19.2	0.0	0.1	0.0	0.0	0.1	1,986		
	Late Archaic	41BL148* 41CV41-A 41CV379 41CV382	0.8	0.4	0.1	0.0	3.1	0.5	0.6	0.1	0.0	0.4	1.9	1.7	22.2	18.5	0.4	19.2	0.0	0.1	0.0	0.0	0.1	1,986	
Late Archaic–Austin phase	41CV41-A 41CV46** 41CV380	0.0	0.2	0.0	0.0	0.0	3.0	n/a	0.0	34.1	0.1	0.0	2.2	1.6	1.2	6.5	0.7	48.6	0.0	1.5	0.2	0.0	0.0	2,037	
	Late Archaic–Late Prehistoric	41CV44** 41CV111*	0.0	0.0	0.0	0.0	2.8	1.0	0.9	0.0	35.9	0.0	0.0	0.0	0.0	19.2	23.7	0.0	16.2	0.0	0.2	0.0	0.0	16,482	
Austin phase	41CV93-B	0.0	0.0	0.0	0.0	0.0	0.0	n/a	0.0	56.3	0.0	0.0	6.3	0.0	25.0	6.3	0.0	0.0	0.0	6.3	0.0	0.0	0.0	16	
	Late Prehistoric	41CV41-A 41CV47 41CV382	0.4	1.7	1.3	0.3	1.1	2.0	n/a	0.1	51.6	0.5	2.0	4.5	2.1	1.3	10.4	2.2	17.8	0.3	0.2	0.0	0.2	1,113	
Total %			0.1	0.2	0.1	0.0	2.1	1.4	0.6	0.0	33.1	0.1	0.1	0.5	0.6	14.8	27.0	0.2	18.7	0.0	0.2	0.0	0.0	0.0	
	Total No.		21	46	20	5	537	370	165	0.3	8,543	30	37	134	156	3,809	6,963	63	4,827	8	61	9	2	3	4

Note: Shaded areas represent samples that are greater than 25 percent.

* When Texas A&M University did this analysis, only seven chert types were recognized: Cowhouse White, Texas Novaculite, Heiner Lake Tan and Blue, Fort Hood Yellow, Fort Hood Gray, Gray-Brown-Green, and Owl Creek Black. Heiner Lake Tan and Blue was later split into four types.

** Heiner Lake Blue and Heiner Lake Blue-Light were combined by Mariah analysts during this analysis. All materials were grouped as Heiner Lake Blue.



his treatise on Fort Hood geomorphology, Nordt (1992:Table 1) classifies both the House and Owl Creek drainages as meander-braid transition streams but also highlights these characteristics:

	House Creek	Owl Creek
<i>Size</i>	intermediate 68 km ²	small 72 km ²
<i>Channel gradient</i>	4.9 m/km	3.4 m/km
<i>Sinuosity</i>	1.2	1.1

These data show that the House Creek drainage basin is 2.3 times larger and has a steeper gradient than does Owl Creek, but House Creek is only slightly more meandering (sinuous). But these differences appear to be relatively minor. A comparison of the geomorphic maps and schematic geologic cross sections of House and Owl Creeks created by Nordt (1992) shows the overall similarities between these drainages (compare Nordt's Figures 10 and 12 for Owl Creek with Figures 13 and 14 for House Creek). Both streams have large expanses of Holocene age terraces where Fort Hood alluvial fill is preserved. In both valleys, Fort Hood alluvium is exposed on the T_{1a} surfaces that abut the higher Pleistocene terraces.

A large gap in cultural occupations between 6000 and 3700 B.C. is apparent in the House Creek radiocarbon data, but the temporal data for the Owl Creek components are too imprecise to know if there were occupations of Owl Creek during this time. Three undated cultural components present in Fort Hood alluvium (see Table 6-6) probably represent Early or Middle Archaic occupations, but they do not necessarily fill this gap. This apparent gap may reflect reality to a large degree, as opposed to being strictly an archeological sampling phenomenon. The lack of occupations during most of the Early Archaic period could relate to the extended period of extreme aridity often termed the Altithermal climatic interval (e.g., Collins

1995:383–384; Johnson and Goode 1994:20–21; Nordt 1992:64, Figure 31; Trierweiler 1996:662). It has been speculated that two factors account for the general paucity of human occupation evidence in Central Texas during this time. Human population density was lower because conditions were inhospitable, and the period is characterized as nondepositional with severe and episodic erosion washing away sediments in many areas. Thus, if fewer people were there generating fewer habitation sites and conditions were not generally favorable for forming (burial and preservation) sites, these factors would translate to a sparse Early Archaic archeological record. This is, in fact, exactly what is generally observed across all of Fort Hood (Trierweiler 1996:658–662) and across central Texas.

In his geoarcheological interpretations of the Fort Hood alluvial fill, Nordt (1992:74) estimates that, “During the last 5,000 years probably no more than 1/3 of the buried archaeological record in the Fort Hood alluvium has been lost from middle and late Holocene erosion, and modern channel trenching and lateral migration.” This statement, which applies generally to all of Fort Hood, appears to be true. It may be argued, however, that the erosional stripping that has occurred was most intensive during the Middle Archaic period. Nordt's (1992:Figure 31) second major erosional episode, crudely dated to the late Altithermal between ca. 2900 and 2300 B.C., may be responsible for the absence of occupational evidence in the House Creek drainage between 6000 and 3700 B.C. It is probably not a mere coincidence that the radiocarbon dates obtained during the early 1990s site testing by TRC Mariah archeologists show a similar phenomenon. A graph of the temporal distribution of the 199 radiocarbon dates from 119 tested sites on Fort Hood shows a distinct gap, with no radiocarbon dates falling between about 5800 to 5200 B.P. (Trierweiler 1996:Figure 11.7) or ca. 3850 to 3250 B.C. Again, this data suggests that sediments and sites dating to this time period may have been removed by a major mid-Holocene erosional episode.

NATIONAL REGISTER EVALUATIONS AND MANAGEMENT RECOMMENDATIONS

7

Gemma Mehalchick

In 2001–2002, Prewitt and Associates formally tested 13 subareas (at 9 sites) and evaluated them according to the National Register of Historic Places criteria defined in the Fort Hood research design (Ellis et al. 1994). This chapter discusses the recommendations for National Register eligibility of each subarea and potential further work at sites recommended as eligible. Programmatic recommendations related to long-term management of the cultural resources at Fort Hood also are offered.

RECOMMENDATIONS OF NATIONAL REGISTER ELIGIBILITY AND FURTHER SITE INVESTIGATIONS

Nine of the 13 prehistoric subareas are assessed as eligible for listing in the National Register and meet most of the crucial data needs defined in the Fort Hood site significance model (Table 7-1). Four subareas are recommended as not eligible for listing because they demonstrate fatal contextual flaws. No stratigraphically discrete and intact cultural components could be isolated, so these subareas are considered to possess limited or no research potential and warrant no further work or management.

Protection is the recommended management policy for the nine National Register-eligible subareas. The U.S. Army should try to protect and preserve important archeological resources and avoid or prevent any damage to them. If avoidance and protection are not possible, data recovery excavation may be warranted. The following discussion focuses on defining the horizontal and vertical extent of the identified cultural deposits at each site, which are considered target areas for further archeological

investigation (Table 7-2). General investigation procedures are suggested for each site, but no specific recommendations for further testing—such as the area or volume to be excavated—are offered. If data recovery is deemed necessary, then potential disturbances and areas of potential effect would have to be taken into account, and a site-specific research design should be developed. Such designs should include specific field strategies that can provide significant archeological data that will contribute to the knowledge base for central Texas prehistory.

Future excavations at three subareas—41BL788-A, 41CV760, and 41CV1023-E—are restricted by the landforms they occupy and the shallowly buried cultural deposits they contain. At 41BL788-A, the slope area is approximately 544 m² and subsumes a burned rock midden covering approximately 336 m². The midden and nonmidden cultural deposits are up to 40 cm thick. Based on the testing results, mechanical and manual excavations should initially focus on different portions of the midden to identify spatially discrete features or activity areas. Within the midden, deposits obviously disturbed by looting can be avoided. Units excavated around the midden will aid in delimiting any off-midden deposits that warrant further investigation.

The T₁ surface at 41CV760 consists solely of a burned rock midden encompassing 380 m² with a maximum depth of 50 cm. As with 41BL788-A, excavations at 41CV760 should concentrate on various sections of the feature, avoiding looted deposits. This site also encompasses a lower terrace (T₀) containing a buried soil and associated cultural materials. Although the paleosol is approximately 40 cm thick, the prehistoric remains occur near the base of the A horizon from 80 to

Table 7-1. Summary of National Register eligibility recommendations and key data needs for evaluations of prehistoric sites

Site	Site Type	Identifiable or Dateable Bones or Shells	Identifiable or Dateable Macrobotanical Remains	Features with Economic or Chronometric Potential	Multiple, Spatially Separated Features	Burned Rock Features	Unique Artifacts, Concentrations, or Features
SITES RECOMMENDED AS ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER							
41BL788-A	Open campsite- burned rock midden	yes	yes	yes	no	yes	yes
41CV93-B	Open campsite	yes	yes	yes	yes	yes	yes
41CV760	Open campsite- burned rock midden	yes	yes	yes	no	yes	no
41CV769	Open campsite	no		yes	no	yes	no
41CV1023-E	Rockshelter	yes	yes	yes	yes	yes	yes
41CV1182-C	Rockshelter	yes	yes	yes	no	yes	no
41CV1415	Paluxy (open campsite)	yes	yes	yes	yes	yes	yes
41CV1554	Open campsite	no	no	yes	no	yes	no
41CV1557	Open campsite	yes	yes	yes	yes	yes	yes
SITES RECOMMENDED AS NOT ELIGIBLE FOR LISTING IN THE NATIONAL REGISTER							
41CV1023-C	Open campsite	yes	no	no	no	no	no
41CV1182-A	Rockshelter	yes	no	no	no	no	no
41CV1182-B	Open campsite and lithic procurement area	yes	no	no	no	yes	no
41CV1182-D	Rockshelter	no	no	no	no	no	no

Note: Key data needs as Ellis et al. (1994:187–188) defined. Key data needs 1, 2, 3, and 6 are considered essential for determining research potential and National Register significance.

Table 7-2. Summary of cultural deposits at National Register-eligible sites

Site	Site Type	Horizontal Extent of Cultural Deposits (m)	Area of Cultural Deposits (m ²)	Vertical Extent of Cultural Deposits (cm)
41BL788-A	open campsite-burned rock midden	32.0 x 17.0	544	surface to 40
41CV93-B	open campsite	unknown	unknown	20–40 and 140–170
41CV760	open campsite-burned rock midden	20.0 x 19.0 (midden) and unknown	380 (midden) and unknown	surface to 50 (midden) and 80–100
41CV769	open campsite	unknown	unknown	30–40 and 260–310
41CV1023-E	rockshelter	36.5 x 6.0	219	20–50
41CV1182-C	open campsite	15 x 10*	150*	60–100
41CV1415	open campsite (Paluxy)	unknown	unknown	10–170**
41CV1554	open campsite	unknown	unknown	30–60 and 270–340
41CV1557	open campsite	unknown	unknown	15–420***

* minimum size estimate

** includes eight features

*** includes five features

100 cm. A cutbank exposure indicates the paleosol is about 5 m long northwest to southeast, but its horizontal extent is unknown. At first, some isolated units placed on the terrace away from the cutbank and beyond the previous excavations would help to determine the boundaries of the buried paleosol and cultural deposits. The size and placement of an excavation block would depend on these results.

Site 41CV1023-E is a large rockshelter with maximum dimensions of 36.5x1.2 m. One excavation encountered two intact features in the upper 50 cm of fill, and the sediments extend to a maximum depth of 80 cm. The rockshelter exhibits no evidence of looting, but drip-line erosion has affected some of the deposits. Because massive, immovable boulders cover most of the shelter's floor, the area of exposed deposits is confined to the north end of the shelter and adjoining a narrow strip along the back wall.

The six remaining subareas recommended as eligible for National Register listing are five open campsites and one Paluxy site. Discrete components are identified at these sites, but each would require further testing to better define its overall size and thickness of the cultural deposits. Excluding a major shift in military land use, two sites—41CV1182-C and 41CV1554—are considered protected because they are located within endangered species (bird) habitat and are difficult to access. At 41CV1182-C, a burned rock feature and associated living surface are buried between 60 and 100 cm, and these cultural deposits cover an area of at least 150 m². At 41CV1554, at least one vertically discrete component is defined based on a burned rock feature between 40 and 50 cm. Peaks in cultural materials indicate there may be more archeological deposits between 30 and 60 cm. Also, sparse lithic artifacts buried at 270 to 340 cm are significant because the context of these materials suggests a Paleoindian occupation, but no datable samples were recovered to confirm this.

Multiple components—defined by distinct features at different depths—were encountered at 41CV93-B, 41CV769, 41CV1415, and 41CV1557. These sites are fairly large and each contains deep deposits. Three of these sites are likely not in any imminent danger, but natural erosion threatens the probably early Archaic and middle Archaic cultural zones at 41CV1557. Stream erosion and lateral movements of Turkey Run and House Creek have eaten away much of the alluvial terrace at this confluence. The early to middle Archaic occupation zone identified in Test Unit 2 is confined to a ca. 30-m-long and 6-m-wide wedge of alluvial terrace that eventually will be destroyed by stream erosion (see Figure 4-25). Because this entire area could be destroyed in a single flood, this portion of the site should be a high priority for future excavation.

PROGRAMMATIC RECOMMENDATION

The nine National Register-eligible sites tested during the 2001–2002 season increase the total number of eligible sites to 236 (Table 7-3). Previous investigations have discussed in detail past and recurring threats to archeological sites at Fort Hood, and recommendations to protect or mitigate damage to these nonrenewable resources. Programmatic recommendations by Boyd et al. (2000:63–73) are considered the most comprehensive plan, which includes a multifaceted approach for cultural resources management. Fort Hood's Cultural Resources Management Office has carried out or is implementing various parts of this plan and should continue to do so. They have provided ARPA training for base personnel, initiated site monitoring and surveillance, and installed protective barriers at some sites. Fort Hood also has done data recovery to mitigate damage at two sites, the Clear Creek Golf Course site (TRC Mariah Associates, not yet reported) and the Firebreak site (Mehalchick et al. 2002).

Table 7-3. Updated database of National Register-eligible prehistoric sites on Fort Hood

Site Type	No. of eligible Subareas as of October 2001*	No. of eligible Subareas Added in 2001–2002	Total No. of Subareas as of December 2002
Medicine Wheel	1	—	1
Lithic Scatter	2	—	2
Rock Art	1	—	1
Open Campsite	46	5	51
Open Campsite-Burned Rock Midden	51	2	53
Paluxy	19	1	20
Burned Rock Mound	16	—	16
Burned Rock Midden	15	—	15
Rockshelter	72	1	73
Cave-Sinkhole	4	—	4
Total	227	9	236

* Number of National Register-eligible sites taken from Mehalchick, Kibler, et al. (2003:Table 8.4).

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APPENDIX A: Summary and Evaluation of Radiocarbon Dates

Fourteen charcoal samples obtained from feature and nonfeature contexts at eight prehistoric sites were submitted to Beta Analytic, Inc., of Miami, Florida, for radiocarbon dating. Four samples from 41CV1554 and 41CV1557 could not be dated because amounts of charcoal were insufficient. Only 2 of the 14 samples provided enough charred material for standard radio-

metric assays, which required extended counting time. The rest were dated using the AMS method. Table A-1 presents laboratory sample numbers, significant provenience data, conventional radiocarbon age and $\delta^{13}\text{C}$ value in ‰, calibrated calendrical dates (2-sigma range), and wood identification if appropriate for each sample.

Table A-1. Summary of radiocarbon dates

Beta Sample	Site	Analysis Unit	Provenience	Feature	Conventional Age B.P.	¹³ C/ ¹² C Ratio (0/00)	Calibrated Calendrical Date, 2-sigma range*	Wood Identification
Beta-167176	41BL788-A	1	Test Unit 2, 40 cm	1	1480 ± 40	-24.8	A.D. 530–650	indeterminate
Beta-167177	41CV93-B	2	Test Unit 2, 155 cm	2	980 ± 40	-26.0	A.D. 990–1160	–
Beta-167178	41CV760	1	Test Unit 1, 40–50 cm	1	100 ± 40	-25.7	A.D. 1670–1950	<i>Ulmus</i> sp.
Beta-167179	41CV760	2	Test Unit 2, 99 cm	–	1890 ± 40	-22.5	A.D. 40–230	–
Beta-167180	41CV1023-E	2	Test Unit 8, 31 cm	7	530 ± 40	-24.9	A.D. 1320–1440	–
Beta-167181**	41CV1182-C	3	Test Unit 4, 83 cm	1	1270 ± 60	-25.7	A.D. 650–890	<i>Quercus</i> sp.
Beat-167182	41CV1415	1	Test Unit 5, 140 cm	5	660 ± 40	-27.8	A.D. 1280–1400	–
Beta-167183**	41CV1415	1	Test Unit 10, 44 cm	3	860 ± 60	-26.1	A.D. 1030–1280	<i>Quercus</i> sp.
n/a	41CV1554	1	Test Unit 1, 250–260 cm	–	insufficient charcoal	n/a	n/a	–
n/a	41CV1554	2	Test Unit 1, 270–280 cm	–	insufficient charcoal	n/a	n/a	–
n/a	41CV1557	1	Test Unit 5, 264 cm	2	insufficient charcoal	n/a	n/a	–
Beta-167186	41CV1557	1	Test Unit 2, 163 cm	5	7890 ± 40	-26.2	7020–6640 B.C.	indeterminate
n/a	41CV1557	1	cutbank, ca. 414 cm	1	insufficient charcoal	n/a	n/a	–
Beta-167956***	41CV1557	1	Test Unit 5, 260 cm	2	7260 ± 40	-24.9	6220–6020 B.C.	–

Note: All radiocarbon dates were obtained from charcoal.

* Dates were calibrated by Beta Analytic, Inc., using INTCAL98. Calibration data references are:

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** Standard radiometric date; all other dates were done using the accelerator mass spectrometer method.

*** This sample consisted of very fine charcoal and did not undergo normal pretreatment, so the date could be somewhat recent because of modern organic contaminants.

Appendix B: Soil Stratigraphic Profiles

Karl W. Kibler

Site 41BL788-A

Test Unit 1, south wall

Zone 1 0–29 cm	Very dark gray (10YR 3/1, moist) silty clay loam, friable, moderate medium granular structure, 20 percent limestone gravels (matrix-supported, granule- to pebble-sized, angular to subangular), common roots and rootlets, common burned rocks, abrupt smooth to wavy lower boundary. Late Holocene colluvium and anthropogenic component, A horizon.
Zone 2 29–59+ cm	Very dark grayish brown (10YR 3/2, moist) silty clay loam, firm, moderate medium granular structure, 30 percent limestone gravels (matrix-supported, granule- to pebble-sized, angular to subangular), common roots and rootlets, lower boundary not observed. Late Holocene colluvium, Bw horizon.

Site 41CV93-B

Backhoe Trench 3, west wall

Zone 1 0–15 cm	Very dark gray (10YR 3/1, moist) clay loam, firm, moderate medium granular structure, clear smooth lower boundary. Late Holocene Ford alluvium, AC horizon.
Zone 2 15–50 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate medium blocky subangular structure, few matrix-supported gravels, gradual smooth lower boundary. Late Holocene upper West Range alluvium, 2Ab horizon.
Zone 3 50–120 cm	Dark grayish brown (10YR 4/2, moist) clay loam, firm, moderate medium blocky subangular structure, common matrix-supported gravels, abrupt smooth lower boundary. Late Holocene upper West Range alluvium, 2Bwb horizon.
Zone 4 120+ cm	Clast-supported gravels, lower boundary not observed. Late Holocene lower West Range alluvium, 2C horizon.

Backhoe Trench 7, west wall

Zone 1 0–27 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate fine blocky angular structure, gradual smooth lower boundary. Late Pleistocene Jackson alluvium, A horizon.
Zone 2 27–111+ cm	Light brown (7.5YR 6/4, moist) silty clay, friable, weak fine prismatic breaking to moderate medium blocky angular structure, common CaCO ₃ filaments, 30 percent gravel (granule- to pebble-sized, sub-rounded to rounded), lower boundary not observed. Late Pleistocene Jackson alluvium, Bk horizon.

Test Unit 1, south wall (adjacent to Backhoe Trench 5)

Zone 1 0–26 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate
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	medium blocky subangular structure, gradual smooth lower boundary. Late Holocene Ford-upper West Range alluvium, A horizon.
Zone 2 26–150 cm	Dark grayish brown (10YR 4/2, moist) clay loam, firm, moderate medium blocky subangular structure, thin gravel bed at 86 cm, abrupt smooth lower boundary. Late Holocene upper West Range alluvium, Bw horizon.
Zone 3 150+ cm	Clast-supported gravels, lower boundary not observed. Late Holocene lower West Range alluvium, C horizon.

Test Unit 2, west wall (adjacent to Backhoe Trench 10)

Zone 1 0–39 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate medium blocky subangular structure, thin gravel bed at 39 cm, clear smooth lower boundary. Late Holocene Ford alluvium, A horizon.
Zone 2 39–180 cm	Dark grayish brown (10YR 4/2, moist) clay loam, firm, moderate medium prismatic breaking to moderate medium blocky angular structure, abrupt smooth lower boundary. Late Holocene upper West Range alluvium, Bw horizon.
Zone 3 180+ cm	Clast-supported gravels, lower boundary not observed. Late Holocene lower West Range alluvium, C horizon.

Site 41CV760

Test Unit 1, south wall

Zone 1 0–15 cm	Backdirt from looter's pit.
Zone 2 15–55 cm	Very dark gray (10YR 3/1, moist) silty clay loam, firm, weak medium granular structure, 10 percent limestone gravels (matrix-supported, granule- to pebble-sized, subangular to angular), common roots and rootlets, common burned rocks, abrupt smooth lower boundary. Late Holocene colluvium and anthropogenic component, Ab horizon.
Zone 3 55–70+ cm	Dark brown (10YR 3/3, moist) clay loam, firm, moderate medium granular structure, 50 percent limestone gravels (matrix-supported, granule- to cobble-sized, subangular to subrounded), few roots and rootlets, lower boundary not observed. Late Holocene colluvium, Bwb horizon.

Test Unit 2, south wall

Zone 1 0–15 cm	Very dark grayish brown (10YR 3/2, moist) silty clay loam, firm, weak medium granular structure, 2 percent limestone gravels (matrix-supported, granule-sized, subrounded to subangular), abrupt smooth lower boundary. Recent alluvium, AC horizon.
Zone 2 15–64 cm	Dark grayish brown (10YR 4/2, moist) clay loam, firm, moderate medium granular structure, 40 percent limestone gravels (matrix-supported, granule- to pebble-sized, subrounded to angular), abrupt smooth lower boundary. Late Holocene colluvium, Bw horizon.

Zone 3 64–90 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate fine blocky subangular structure, 2 percent limestone gravels (matrix-supported, granule-sized, subangular to sub-rounded), clear smooth lower boundary. Late Holocene alluvium, 2Ab horizon.
Zone 4 90–105+ cm	Dark grayish brown (10YR 4/2, moist) clay loam, firm, moderate fine blocky subangular structure, 2 percent limestone gravels (matrix-supported, granule-sized, subangular to subrounded), lower boundary not observed. Zone 4 appears to rest on a very gravelly wedge of colluvium. Late Holocene alluvium, 2Bwb horizon.

Site 41CV769

Backhoe Trench 1, west wall

Zone 1 0–41 cm	Dark grayish brown (10YR 4/2, moist) clay loam, firm, moderate medium blocky subangular structure, common roots and rootlets, diffuse smooth lower boundary. Early to middle Holocene Fort Hood alluvium, Ap horizon.
Zone 2 41–194 cm	Light yellowish brown (10YR 6/4, moist) silty clay loam, friable, weak fine prismatic breaking to moderate medium blocky angular structure, few matrix-supported gravels, abrupt smooth lower boundary. Early to middle Holocene Fort Hood alluvium, B horizon.
Zone 3 194–304+ cm	Brown (7.5YR 5/4, moist) silty clay loam, firm, strong medium prismatic structure, common but faint CaCO ₃ filaments, lower boundary not observed. Early to middle Holocene Fort Hood alluvium, Btk horizon.

Backhoe Trench 5, south wall

Zone 1 0–42 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate medium blocky subangular structure, common dispersed gravels (former stringer disturbed in plow zone), gradual smooth lower boundary. Early to middle Holocene Fort Hood alluvium, Ap horizon.
Zone 2 42–224 cm	Light brown (7.5YR 6/4, moist) silty clay, friable, moderate fine blocky angular structure, few matrix-supported gravels (rounded), clear smooth lower boundary. At the base of Zone 2 is the feather-edge of a gravel bed that immediately pinches out to the east and is up to 70 cm thick to the west. Early to middle Holocene Fort Hood alluvium, B horizon.
Zone 3 224–284+ cm	Light yellowish brown (10YR 6/4, moist) silty clay, firm, strong medium blocky angular structure, lower boundary not observed. Late Pleistocene to early Holocene Georgetown alluvium, B horizon.

Backhoe Trench 7, east wall

Zone 1 0–30 cm	Very dark grayish brown (10YR 3/2, moist) silty clay loam, firm, moderate medium blocky subangular structure, gradual smooth lower boundary. Early to middle Holocene alluvium, Ap horizon.
Zone 2 30–236 cm	Yellowish brown (10YR 5/4, moist) silty clay loam, firm, weak fine

prismatic breaking to moderate medium blocky angular structure, few matrix-supported gravels, clear smooth lower boundary. Early to middle Holocene Fort Hood alluvium, Bt horizon.

Zone 3 236–322+ cm Very pale brown (10YR 7/3, moist) silty clay, firm, moderate medium blocky angular structure, many distinct medium (10YR 7/6) mottles, lower boundary not observed. Late Pleistocene to early Holocene Georgetown alluvium, B horizon.

Test Unit 10, west wall

Zone 1 0–21 cm Very dark gray (10YR 3/1, moist) clay loam, firm, moderate fine blocky subangular structure, 40 percent limestone gravels (granule- to pebble-sized, subrounded to rounded), gravels are bedded in the lower half of the zone, abrupt smooth lower boundary. Recent alluvium, AC horizon.

Zone 2 21–71 cm Black (2.5Y 2.5/1, moist) clay loam, firm, moderate fine blocky subangular structure, 10 percent limestone gravels (granule- to cobble-sized, subrounded to rounded), clear smooth lower boundary. Late Holocene Ford alluvium, 2Ab horizon.

Zone 3 71–120+ cm Grayish brown (10YR 5/2, moist) silty clay, firm, moderate fine blocky subangular structure, 30 percent limestone gravels (granule- to cobble-sized, subrounded to rounded), lower boundary not observed. Late Holocene Ford alluvium, 2BCb horizon.

Site 41CV1023-C

Test Unit 13, east wall

Zone 1 0–6 cm Brown (10YR 5/3, moist) very fine sand, friable, structureless, abrupt wavy lower boundary. Recent alluvium, C horizon.

Zone 2 6–97 cm Dark gray (10YR 4/1, moist) clay loam, firm, weak fine blocky subangular, 2 percent limestone gravels (granule- to pebble-sized, subrounded), abrupt smooth lower boundary. Late Holocene Ford alluvium, 2ABb horizon.

Zone 3 97–130+ cm Dark gray (10YR 4/1, moist) sandy clay loam, firm, moderate fine blocky subangular structure, 10 percent limestone gravels (granule- to cobble-sized, subrounded to rounded), lower boundary not observed. Late Holocene Ford alluvium, 2BCb horizon.

Site 41CV1023-E

Test Unit 8, east wall

Zone 1 0–5 cm Brown (10YR 5/3, moist) fine laminated mud and fine sand, friable, structureless, very abrupt wavy lower boundary. Recent alluvium, C horizon.

Zone 2 5–21 cm Dark gray (10YR 4/1, moist) clay loam, firm, moderate fine blocky subangular structure, 5 percent limestone rock fragments (matrix-supported,

granule- to pebble-sized, angular to subangular), abrupt broken lower boundary. Late Holocene Ford alluvium, 2Ab horizon.

Zone 3 21–37 cm Grayish brown (10YR 5/2, moist) silty clay loam, firm, moderate fine blocky subangular structure, common distinct coarse (10YR 5/3) mottles, 5 percent limestone rock fragments, charcoal and oxidized sediment related to cultural feature, very abrupt wavy lower boundary. Late Holocene Ford alluvium, 2Bwb horizon.

Zone 4 37+ cm Lower Cretaceous limestone bedrock, R horizon.

Site 41CV1182-a

Test Unit 2, north wall

Zone 1 0–8 cm Dark yellowish brown (10YR 4/4, moist) silty clay loam, loose, structureless, 25 percent angular limestone rock fragments, abrupt wavy lower boundary. C horizon.

Zone 2 8–42+ cm Very dark gray (10YR 3/1, moist) clay loam, firm, structureless, 40–50 percent angular limestone rock fragments (granule- to boulder-sized), lower boundary not observed. C2 horizon.

Site 41CV1182-B

Cutbank Exposure of T₂ Terrace

Zone 1 0–36 cm Very dark gray (10YR 3/1, moist) silty clay loam, firm, moderate medium granular structure, 50 percent limestone gravels (matrix-supported, granule- to cobble-sized, subrounded to subangular), abrupt smooth lower boundary. Holocene alluvium, A horizon.

Zone 2 36–120 cm Reddish yellow (7.5YR 6/6, moist) silt loam, friable, structureless, 70 percent limestone gravels (granule- to boulder-sized, subrounded to angular), abrupt smooth lower boundary. Late Pleistocene to early Holocene alluvium, 2Bb horizon.

Zone 3 120–250 cm Reddish yellow (7.5YR 6/6, moist) silty clay, firm, weak medium granular structure, 50 percent soft carbonate masses, 5 percent limestone gravels (granule- to pebble-sized, subrounded), lower boundary not observed. Late Pleistocene to early Holocene alluvium, 2Btkb horizon.

Site 41CV1182-C

Cutbank Exposure of T₁ Terrace (Test Units 4 and 5)

Zone 1 0–38 cm Very dark grayish brown (10YR 3/2, moist) silty clay loam, firm, moderate medium granular structure, thin gravel bed at 20 cm with subrounded, granule- to pebble-sized clasts, gradual smooth lower boundary. Late Holocene alluvium, A horizon.

Zone 2 38–60 cm Dark grayish brown (10YR 4/2, moist) clay loam, firm, weak fine blocky

subangular structure, 20 percent limestone gravels (matrix-supported, granule- to pebble-sized, subrounded to subangular), abrupt smooth lower boundary. Late Holocene alluvium, Bw horizon.

Zone 3 60–106+ cm Brown (10YR 4/3, moist) sandy clay, firm, structureless, 60–70 percent limestone and chert gravels (granule- to cobble-sized, subrounded to subangular), cultural feature inset in top of zone, lower boundary not observed. Late Holocene alluvium, BC horizon.

Site 41CV1415

Backhoe Trench 2, east wall

Zone 1 0–31 cm Very dark grayish brown (10YR 3/2, moist) fine sandy loam, friable, weak medium blocky subangular structure, common roots and rootlets, abrupt smooth to wavy lower boundary. Late Holocene colluvium and slopewash, A horizon.

Zone 2 31–54+ cm Yellowish red (5YR 5/6, moist) sandy clay, firm, moderate medium blocky angular structure, lower boundary not observed. Late Pleistocene to early Holocene colluvium and slopewash, 2Bt horizon.

Backhoe Trench 3, north wall

Zone 1 0–21 cm Dark grayish brown (10YR 4/2, moist) very fine sandy loam, friable, moderate medium blocky subangular structure, common roots and rootlets, clear wavy lower boundary. Late Holocene colluvium and slopewash, A horizon.

Zone 2 21–49 cm Brown (10YR 5/3, moist) very fine sandy loam, friable, moderate medium blocky angular structure, 2 percent limestone gravels (matrix-supported, granule- to pebble-sized, subrounded to rounded), gradual smooth lower boundary. Late Holocene colluvium and slopewash, Bw horizon.

Zone 3 49–154+ cm Reddish yellow (7.5YR 6/6, moist) loamy fine sand, friable, moderate medium blocky angular structure, 5 percent limestone gravels (matrix-supported, granule- to pebble-sized, subrounded to rounded), small friable sandstone rock fragments (2.5Y 8/6) at base of zone, few fine CaCO₃ filaments. Lower Cretaceous Paluxy Formation, 2BC horizon.

Backhoe Trench 4, south wall (at Test Unit 5)

Zone 1 0–22 cm Very dark grayish brown (10YR 3/2, moist) very fine sandy loam, friable, weak medium blocky subangular structure, common roots and rootlets, clear wavy lower boundary. Late Holocene colluvium and slopewash, A horizon.

Zone 2 22–63 cm Brown (10YR 4/3, moist) very fine sandy loam, friable, moderate medium blocky angular structure, common roots and rootlets, gradual smooth lower boundary. Late Holocene colluvium and slopewash, Bw horizon.

Zone 3 63–101+ cm Brown (7.5YR 4/3, moist) fine sandy loam, friable, weak medium blocky angular structure, few burned rocks, lower boundary not observed. Late Holocene colluvium and slopewash, B horizon.

Site 41CV1554

Backhoe Trench 3, east wall

Zone 1 0–40 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate fine blocky subangular structure, gradual smooth lower boundary. Early to middle Holocene Fort Hood alluvium, A horizon.
Zone 2 40–92 cm	Brown (10YR 5/3, moist) silty clay, friable, weak fine prismatic breaks to moderate medium blocky angular structure, few matrix-supported gravels, clear smooth lower boundary. Early to middle Holocene Fort Hood alluvium, B horizon.
Zone 3 92–258+ cm	Yellowish brown (10YR 5/4, moist) silty clay, friable, weak fine prismatic breaks to moderate medium blocky angular structure, dispersed gravel bed at 125–175 cm (granule- to pebble-sized, subrounded to rounded) common CaCO ₃ filaments, lower boundary not observed. Early to middle Holocene Fort Hood alluvium, Bk horizon.

Backhoe Trench 4, east wall

Zone 1 0–50 cm	Very dark grayish brown (10YR 3/2, moist) silty clay loam, moderate fine blocky subangular structure, clear smooth lower boundary. Early to middle Holocene Fort Hood alluvium, A horizon.
Zone 2 50–204 cm	Brown (10YR 5/3, moist) silty clay, friable, weak fine prismatic breaks to moderate medium blocky angular structure, few matrix-supported gravels, abrupt smooth lower boundary. Early to middle Holocene Fort Hood alluvium, B horizon.
Zone 3 204–281+ cm	Light yellowish brown (10YR 6/4, moist) silty clay, friable, moderate medium blocky angular structure, lower boundary not observed. Late Pleistocene to early Holocene Georgetown alluvium, 2Bb horizon.

Site 41CV1557

Backhoe Trench 1, south wall

Zone 1 0–20 cm	Dark grayish brown (10YR 4/2, moist) silty clay, firm, weak fine granular structure, clear smooth lower boundary. Late Holocene Ford alluvium, AC horizon.
Zone 2 20–47 cm	Very dark grayish brown (10YR 3/2, moist) clay loam, firm, moderate medium blocky subangular structure, 2 percent limestone gravels (matrix-supported, granule- to pebble-sized, rounded), clear smooth lower boundary. Late Holocene West Range alluvium, 2Ab horizon.
Zone 3 47–83 cm	Brown (10YR 4/3, moist) clay loam, very firm, weak fine blocky subangular structure, 75 percent limestone gravels (granule- to cobble-sized, subrounded to rounded), abrupt smooth to wavy lower boundary. Late Holocene West Range alluvium, 2Bwb horizon.
Zone 4 83–160+ cm	Yellowish brown (10YR 5/4, moist) clay, firm, moderate fine blocky angular

structure, 5 percent limestone gravels (matrix-supported, granule- to pebble-sized, subrounded to rounded), lower boundary not observed. Late Holocene West Range alluvium, 2Btb horizon.

Backhoe Trench 3, north wall (near Test Unit 1)

- | | |
|--------------------|---|
| Zone 1 0–25 cm | Very dark gray (10YR 3/1, moist) silty clay loam, firm, moderate fine granular structure, clear smooth lower boundary. Early to middle Holocene Fort Hood alluvium, A horizon. |
| Zone 2 25–108 cm | Brown (7.5YR 4/4, moist) silty clay loam, firm, moderate medium blocky subangular structure, 5 percent limestone gravels (matrix-supported, granule- to pebble-sized, rounded), discontinuous thin gravel bed at 100 cm, clear smooth lower boundary. Early to middle Holocene Fort Hood alluvium, B horizon. |
| Zone 3 108–197+ cm | Brown (7.5YR 4/3, moist) clay loam, firm, moderate medium blocky angular structure, 5 percent limestone gravels, few CaCO ₃ filaments, lower boundary not observed. Early to middle Holocene Fort Hood alluvium, Bt horizon. |

Test Units 2, north wall

- | | |
|--------------------|---|
| Zone 1 0–31 cm | Very dark gray (10YR 3/1, moist) silty clay loam, firm, moderate medium granular structure, clear smooth lower boundary. Early to middle Holocene Fort Hood alluvium, A horizon. |
| Zone 2 31–120 cm | Brown (7.5YR 4/3, moist) silty clay loam, firm, moderate fine prismatic breaks to moderate medium blocky angular structure, 2 percent limestone gravels (matrix-supported, granule- to pebble-sized, rounded), abrupt smooth lower boundary. Early to middle Holocene Fort Hood alluvium, B horizon. |
| Zone 3 120–180+ cm | Brown (7.5YR 4/4, moist) silty clay loam, firm, moderate fine prismatic breaks to moderate medium blocky angular structure, burned rock feature at 145–155 cm, 5 percent limestone gravels (granule- to pebble-sized, rounded), lower boundary not observed. Early to middle Holocene Fort Hood alluvium, Bt horizon. |

APPENDIX C: Analysis of Faunal Remains

Brian S. Shaffer

Faunal remains recovered from 10 sites on Fort Hood were analyzed to determine the types of taxa represented and the taphonomic condition of the remains. Specimens were identified using the comparative zooarcheological collection curated at the University of North Texas Institute of Applied Sciences. Identifications were made to the most-specific taxon possible (Table C-1) given the condition of the remains, comparative material available, and analyst skill. Tallies are presented as the number of identified specimens (NISP). The minimum number of individuals is another measure frequently used to quantify faunal remains but is not presented here because none of the taxa from any one site were represented by more than one individual.

The largest sample is from 41CV1557. Most of the faunal remains from this site were recovered from flotation samples and are associated with Feature 5, an occupation zone buried at 150 to 169 cm below surface in Test Unit 2. Because of the small size and abundance of the unidentifiable fragments, the total number of vertebrate bones ($n = 714$) was estimated and breakage was recorded only as angular. Little if any significant data were lost in this estimation because the specimens were so small that even the very

generalized class of animal represented could not be identified (i.e., fish, amphibian, reptile, bird, or mammal).

Taphonomic conditions recorded include weathering, burning, breakage, impact points, and chemical etching (Table C-2). Specimens were examined for gnawing and cut marks as well, but none were identified. The assemblages generally showed little weathering from exposure. Burning was recorded as unburned, charred (burned black), or calcined (burned white or blue). Chemical etching was noted on several specimens and may have been the result of a combination of water and ground chemicals in some cases, but there are dendritic patterns on the surface of many chemically etched bones, some chemical etching was most likely caused by the roots of plants. No evidence was observed that would indicate specimens had been partially digested and hence etched by acidic digestive fluids.

Breakage was the primary destructive factor observed and was recorded as being unbroken, angularly fractured, or spirally fractured. Without collagen in the bone, bones will fracture at angles when subjected to various stressors. With collagen still in the bone, many bones such as thick cortical bone or long bones

Table C-1. Taxa frequencies by site

Taxon	41BL788-A	41CV93-B	41CV760	41CV769	41CV1023-C	41CV1182-A	41CV1182-B	41CV1182-C	41CV1415	41CV1557	Total
<i>Vertebrata</i> , vertebrates	18	5	1	–	4	2	–	4	2	714	750
<i>Testudinata</i> , turtles	2	–	–	–	–	–	–	–	–	–	2
<i>Serpentes</i> , snakes	–	–	–	–	–	–	–	–	2	–	2
<i>Viperidae</i> , pitviper snakes	–	–	–	–	–	–	–	–	4	–	4
<i>Mammalia</i> , rabbit/canid-sized	–	–	–	–	–	–	–	–	–	3	3
<i>Mammalia</i> , canid/deer-sized	48	21	–	1	10	–	23	–	11	–	114
<i>Mammalia</i> , deer/bison-sized	–	–	–	–	–	–	–	–	1	–	1
<i>Leporidae</i> , rabbits and hares	1	–	–	–	–	–	–	–	–	2	3
<i>Lepus</i> sp., jackrabbits	–	–	–	–	–	–	–	–	–	6	6
<i>Sylvilagus</i> sp., cottontail rabbits	–	–	–	–	–	3	–	–	–	10	13
<i>Rodentia</i> , rat/squirrel-sized	–	–	–	–	–	1	–	–	–	–	1
<i>Neotoma</i> sp., wood rats	–	–	–	–	–	–	–	–	–	1	1
<i>Procyon lotor</i> , raccoon	3	–	–	–	–	–	–	–	–	–	3
<i>Artiodactyla</i> , deer-sized ungulates	4	–	–	–	1	–	2	1	2	–	10
<i>Odocoileus</i> sp., deer	2	–	–	–	–	–	–	–	–	–	2
Total	78	26	1	1	15	6	25	5	22	736	915

Table C-2. Frequencies of taphonomic factors by type and site

Site	Light Weathering	Burning			Breakage				Chemical Etched
		Unburned	Charred	Calcined	Unbroken	Angular	Spiral	Impact	
41BL788-A	78	53	21	4	1	40	37	3	16
41CV93-B	26	26	–	–	–	26	–	–	–
41CV760	1	–	–	1	–	1	–	–	–
41CV769	1	–	1	–	–	1	–	–	–
41CV1023-C	15	15	–	–	–	4	11	–	11
41CV1182-A	6	5	1	–	–	2	4	–	1
41CV1182-B	25	7	17	1	–	6	19	–	1
41CV1182-C	5	5	–	–	–	4	1	–	–
41CV1415	22	16	3	3	–	15	7	–	6
41CV1557	736	245	380	111	3	729	4	–	–

in mammals and birds will tend to break in a diagnostic manner called spiral fracturing. The difference between angular and spiral fractures does not, however, indicate the stressors involved. Collagen may be lost through weathering, chemical leaching, or degradation over time through natural deterioration or by fire. The presence of impact points—for example, on

three long bone fragments from 41BL788-A—the locations on specimens exhibiting concoidal fracturing or cones of percussion indicate, however, that the bone was struck by a hard object while it still contained collagen. This type of damage would be expected to be found where humans have processed the bones for marrow or grease.

Appendix D: Macrobotanical Analysis

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INTRODUCTION

Prewitt and Associates, Inc., submitted 60 flotation and 14 macroplant samples from nine archeological sites for botanical analysis. This report depicts the carbonized plant materials identified at these sites, and the archeobotanical assemblage from each is described and assessed for its potential to provide new information about prehistoric foraging in the study region. Table D-1 lists the 15 plant taxa and indeterminate remains identified in the samples, which include charred acorn, bulb, nutshell, and wood fragments.

METHODS

The analysis follows standard archeobotanical laboratory procedures. Each flotation sample is passed through a nested set of screens of 4-mm, 2-mm, and 0.450-mm mesh, and the different fractions are examined for charred materials that are then separated for identification. Because of the high rates of deterioration at most open archeological sites in North America, including those located in arid regions, only carbonized plant materials are considered part of the archeological record. Charred wood caught on the 4-mm and 2-mm mesh screens is separated for weighing, counting, and identification. Carbonized wood from the 4-mm and 2-mm screens (smaller pieces are seldom identifiable) were separated in a grab sample and identified. The material caught on all of the sieve levels, including the bottom pan, was scanned for floral parts, fruits, and seeds. Carbonized wood was identified using the snap technique—examining samples at magnifications of 8 to 45X with a hand lens or a binocular dissecting microscope—and comparing them to references in the archeobotanical herbarium.

The anatomy of some woods is so similar that it is very difficult to identify to the genus level. In other cases, genera within a plant family are usually distinguishable, but some of the archeological material is often too fragmented or deteriorated to allow identification of the genus. For these reasons, some taxa were combined into wood types. All identifications in the type category represent identifications to the taxon level indicated by the name of the type. The following wood types or categories are used in this report:

Willow-Cottonwood Wood Type

(Salicaceae): Includes members of the Salicaceae family, willow and cottonwood, which are difficult to distinguish.

Rose Family Wood Type

(Rosaceae): Includes hawthorns, wild plums, and wild peaches. Small fragments of the wood when charred are difficult to distinguish.

Indeterminate Hardwood: Refers to any woody seed-bearing plant—not a cone-bearing tree such as pine, cypress, or juniper.

Bulb Identification

Bulbs are underground vegetative plant organs that store relatively large amounts of energy, allowing a plant to overwinter or aestivate during times when environmental conditions are not conducive to growth. Because they store energy for initial plant growth during the early stages of a growing season, bulbs are an excellent carbohydrate source for human foragers. Bulbs consist of modified leaves arranged in a rosette around a compressed central stem. Rees (1972:12) describes bulbs as "... an organ consisting of a short stem bearing a number of swollen fleshy leaf bases or scale leaves, with or without a tunic, the whole enclosing the next year's bud." As noted in this description, the modified leaves of a bulb are either bulb scales or leaf bases. Because they are leaves, the epidermal cells (outer skin) of bulb scales or leaf bases can exhibit distinctive shapes that are duplicated within a species and can be characteristic of that species. The structure of a bulb—as well as the epidermal patterns of the modified leaves—can provide clues for identifying the genus or species of the plant.

Because cooking and charring alter the shape of bulbs that are recovered from open archeological sites, the analyst must search carefully for diagnostic features that resist such modification. Bulbs are vegetative parts of plants, and there is some variation in the growth habit of bulbs, not only between species but also within a species. The age of the plant and local environmental conditions affect this variation. As a result, it is necessary to examine as much archeological material as possible to establish

Table D-1. Plant taxa identified in the samples

Taxon	Common name	Part
<i>Acer negundo</i>	boxelder	wood
<i>Carya illinoensis</i>	pecan	nutshell
<i>Carya</i> sp.	hickory	wood
<i>Crataegus</i> sp.	hawthorn	wood
indeterminate	–	bulb, wood
<i>Juglans</i> sp.	walnut	wood
<i>Juniperus</i> sp.	juniper	wood
Leguminosae	legume family	wood
<i>Morus</i> sp.	mulberry	seed
<i>Platanus</i> sp.	sycamore	wood
<i>Prunus</i> sp.	plum	seed, wood
<i>Quercus</i> sp.	oak	acorn, wood
Rosaceae	rose family	seed, wood
<i>Ulmus</i> sp.	elm	wood
Salicaceae	willow family	wood
<i>Vitex</i> sp.	grape	seed

the overall structure of the bulb and to determine which part of a bulb is being analyzed.

Both light and scanning electron microscopy of the leaf scales and the epidermal patterns observed on the dorsal surface of the leaf scales are used to identify bulbs and bulb fragments. The overall structure of the bulb is observed using a dissecting microscope. Leaf scale fragments are selected and removed from the bulb and are attached to aluminum stubs using 12-mm-diameter carbon conductive adhesive tabs. After the samples were dried for 24 hours in a desiccator, they were pretreated by evacuating a vacuum chamber to 60 millitor and coating the target with gold-palladium for 8 minutes. A thick coating produced the best results. The samples were photographed using Polapan 400 film at low magnification (100 to 350X). Samples were identified by comparing them to a reference collection of bulb scale photographs established at Texas A&M University.

Each bulb scale consists of at least three tissue types arranged in layers—the upper epidermis and cuticular covering, the lower epidermis and its cuticular covering, and the palisade parenchyma, which is sandwiched in between the two epidermal layers (De Hertogh and Le Nard 1993). The middle parenchyma layer usually contains abundant starch grains, which must be distinguished from the epidermal material. Cell patterns in the upper epidermis appear to be most useful in identifying the taxon of the bulb, so images of the upper epidermis

are compared to the reference materials when possible. At low magnification, charring often makes it difficult to distinguish between the cells in the parenchyma and the cells in the epidermis, which complicates selection of the material that is attached to the aluminum stubs. Because scanning electron microscope images are high resolution, it is very easy to distinguish the epidermal tissue, but it is usually necessary to conduct several scans of each bulb fragment before good images of the epidermal surface of a bulb fragment have been secured.

RESULTS

Table D-2 describes the macrobotanical remains identified in the flotation samples. Forty-one of the 60 samples yielded 548 pieces of wood, 4 bulb fragments, 7 seeds, and 7 acorn and nutshell fragments. The 19 samples devoid of charred plant material consisted of all the collections from 41CV769, 41CV1554, and 41CV1557, as well as 4 samples from 41CV93-B and 41CV1415.

In addition to flotation samples, 14 charcoal samples were submitted for macroplant identification (Table D-3). Only two samples contained charred wood that could not be identified; most of the other samples were identified as oak, but juniper, elm, and hawthorn woods also were found.

41BL788-A

Eight flotation and two macroplant samples from Feature 1 yielded boxelder, hawthorn, juniper, oak, sycamore, willow family, and indeterminate woods. Recovery of one bulb fragment is inconclusive, primarily because the small size of the material did not allow for precise identification. Some bulbs, such as onions, require short cooking times and could be prepared without a rock-heating element. Other food resources like camas require long periods of exposure to heat.

41CV93-B

There was no carbonized plant material in one flotation sample collected from Feature 1, but a flotation sample from Feature 2 contained walnut and oak wood and four acorn fragments. This find presents an interesting problem because direct botanical evidence for acorn use has

Table D-2. Plant remains from flotation samples

Site	Sample	Volume (l)	Provenience	Context	Taxon	Part	Count	Weight (g)
41BL788-A	F-1	6.75	TU 1, 10–20 cm	Feature 1	<i>Acer negundo</i>	Wood	8	0.5
	F-2	5.50	TU 2, 10–20 cm	Feature 1	<i>Juniperus</i> sp.	Wood	1	0.1
		–			Salicaceae	Wood	12	0.6
	F-3	6.00	TU 1, 20–30 cm	Feature 1	Salicaceae	Wood	6	0.1
	F-4	6.75	TU 4, 10–20 cm	Feature 1	<i>Platanus</i> sp.	Wood	7	0.1
	F-5	7.25	TU 2, 20–30 cm	Feature 1	<i>Platanus</i> sp.	Wood	24	1.0
	F-6	6.13	TU 1, 30–40 cm	Feature 1	<i>Quercus</i> sp.	Wood	1	0.1
	F-7	6.75	TU 2, 30–40 cm	Feature 1	Indeterminate	Bulb	1	0.1
Subtotal		–			Indeterminate	Wood	11	0.4
	F-8	5.63	TU 4, 20–30 cm	Feature 1	Salicaceae	Wood	7	0.1
		50.76					79	3.2
41CV93-B	F-1	3.00	TU 3, 28–40 cm	Feature 1	No Plant Remains	–	–	–
	F-2	19.88	TU 2, 148–168 cm	Feature 2	<i>Quercus</i> sp.	Acorn	4	0.1
		–			<i>Quercus</i> sp.	Wood	100	20.5
		–			<i>Juglans</i> sp.	Wood	3	0.4
Subtotal		22.88					107	21.0
41CV760	F-1	6.75	TU 1, 10–20 cm	Feature 1	cf. <i>Prunus</i> sp.	Wood	9	0.1
	F-2	6.75	TU 1, 20–30 cm	Feature 1	cf. <i>Prunus</i> sp.	Wood	13	0.2
		–			<i>Juniperus</i> sp.	Wood	7	0.1
	F-3	6.63	TU 1, 30–40 cm	Feature 1	<i>Juniperus</i> sp.	Wood	4	0.1
	F-4	6.00	TU 1, 40–50 cm	Feature 1	<i>Juniperus</i> sp.	Wood	5	0.1
		–			Leguminosae	Wood	10	0.3
		26.13					48	0.9
41CV769	F-1	5.88	TU 5, 127–132 cm		No Plant Remains	–	–	–
	F-2	2.00	TU 7, 30–40 cm		No Plant Remains	–	–	–
	F-3	6.63	TU 2, 230–240 cm	Feature 1	No Plant Remains	–	–	–
	F-4	6.25	TU 7, 60–70 cm		No Plant Remains	–	–	–
	F-5	7.13	TU 1, 260–270 cm		No Plant Remains	–	–	–
	F-6	7.13	TU 1, 270–280 cm		No Plant Remains	–	–	–
	F-7	7.00	TU 1, 280–290 cm		No Plant Remains	–	–	–
	F-8	8.00	TU 2, 290–300 cm		No Plant Remains	–	–	–
	F-9	7.13	TU 1, 290–300 cm		No Plant Remains	–	–	–
Subtotal		57.15					0	0.0

Table D-2, continued

Site	Sample	Volume (l)	Provenience	Context	Taxon	Part	Count	Weight (g)
41CV1023-E	F-1	13.75	TU 8, 28–38 cm	Feature 7	<i>Quercus</i> sp.	Wood	33	3.9
	F-2	1.38	TU 8, 38–42 cm	Feature 8	<i>Quercus</i> sp.	Wood	4	0.2
	–	–	–	–	<i>Carya illinoensis</i>	Nutshell	3	0.1
Subtotal		15.13					40	4.2
41CV1182-C	F-1	38.25	TU 4 and TU 5, 64–96 cm	Feature 1	<i>Juglans</i> sp.	Wood	4	0.7
	–	–	–	–	<i>Quercus</i> sp.	Wood	48	6.5
	–	–	–	–	Salicaceae	Wood	7	0.1
Subtotal		38.25					59	7.3
41CV1415	F-1	6.38	TU 3, 20–30 cm		Indeterminate	Wood	6	0.1
	F-2	23.25	TU 4, 60–80 cm		<i>Vitis</i> sp.	Seed	3	–
	–	–	–		<i>Morus</i> sp.	Seed	2	–
	F-3	–	TU 3, 58–75 cm	Feature 2	<i>Quercus</i> sp.	Wood	27	1.4
	F-4	1.50	TU 3, 58–75 cm		No Plant Remains	–	–	–
	–	16.38	TU 4, 60–78 cm		<i>Prunus</i> sp.	Seed	2	–
	–	–	–		<i>Quercus</i> sp.	Wood	21	0.5
	F-5	6.38	TU 3, 80–90 cm		<i>Quercus</i> sp.	Wood	6	0.1
	F-6	6.75	TU 4, 80–90 cm		Salicaceae	Wood	5	0.1
	F-7	5.75	TU 4, 118–137 cm		<i>Quercus</i> sp.	Wood	3	0.1
	F-8	7.00	TU 4, 130–139 cm		<i>Quercus</i> sp.	Wood	2	0.1
	F-9	7.13	TU 4, 140–150 cm		<i>Quercus</i> sp.	Wood	3	0.1
	F-10	7.75	TU 3, 150–160 cm		Salicaceae	Wood	4	0.1
	F-11	24.50	TU 1 and TU 9, 20–55 cm	Feature 3	Indeterminate	Wood	4	0.1
	F-12	40.13	TU 2 and TU 10, 24–40 cm	Feature 3	Indeterminate	Bulb	2	0.1
	F-13	1.75	TU 3, 160–170 cm		<i>Carya</i> sp.	Wood	9	0.1
	F-14	3.38	TU 4, 140–153 cm	Feature 5	<i>Carya</i> sp.	Wood	3	0.1
	F-15	6.75	TU 4, 150–160 cm	Feature 6	Salicaceae	Wood	4	0.1
	F-16	7.13	TU 1, 31–38 cm		No Plant Remains	–	–	–
	F-17	6.25	TU 11, 10–23 cm	Feature 1	<i>Quercus</i> sp.	Wood	7	0.2
	F-18	7.38	TU 6, 140–153 cm	Feature 5	<i>Quercus</i> sp.	Wood	4	0.1
	F-19	9.63	TU 6, 140–151 cm	Feature 7	No Plant Remains	–	–	–
	F-20	1.44	TU 11, 20–25 cm		<i>Quercus</i> sp.	Wood	3	0.1
	F-21	26.50	TU 10, 26–49 cm	Feature 3	<i>Quercus</i> sp.	Wood	4	0.1
	F-22	17.75	TU 9, 22–48 cm	Feature 3	<i>Quercus</i> sp.	Wood	37	2.2
	–	–	–		Salicaceae	Wood	8	0.3

Table D-2, continued

Site	Sample	Volume (l)	Provenience	Context	Taxon	Part	Count	Weight (g)
	F-23	34.88	TU 1, 19–52 cm	Feature 3	Salicaceae	Wood	2	0.1
	F-24	19.63	TU 2, 27–52 cm	Feature 3	<i>Quercus</i> sp.	Wood	39	2.6
	F-25	1.38	TU 11, 128–134 cm	Feature 4	Rosaceae	Wood	3	0.1
	F-26	4.00	TU 11, 130–134 cm		<i>Quercus</i> sp.	Wood	4	0.1
	F-27	3.75	TU 1, 69–72 cm	Feature 8	<i>Quercus</i> sp.	Wood	3	0.1
	F-28	1.75	TU 1, 130–140 cm		<i>Quercus</i> sp.	Wood	13	0.1
Subtotal		306.25					233	9.2
41CV1554	F-1	10.25	TU 8, 40–48 cm	Feature 1	No Plant Remains	–	–	–
41CV1557	F-1	10.50	TU 3, 20–27 cm	Feature 4	No Plant Remains	–	–	–
	F-2	10.63	TU 1, 20–31 cm	Feature 3	No Plant Remains	–	–	–
	F-3	13.13	TU 5, 256–266 cm	Feature 2	No Plant Remains	–	–	–
	F-4	15.25	TU 2, 150–159 cm	Feature 5	No Plant Remains	–	–	–
	F-5	46.75	TU 2, 155–169 cm	Feature 5	No Plant Remains	–	–	–
		96.26					0	0.0
Total		623.06					566	45.8

Table D-3. Wood identification of charcoal samples

Site	Sample	Weight (g)	Context	Identification
41BL788-A	C-1	0.8	Feature 1, Test Unit 1, 30–40 cm	<i>Crataegus</i> sp.
41BL788-A	C-4*	0.4	Feature 1, Test Unit 2, 40 cm	indeterminate
41CV760	C-3	0.7	Feature 1, Test Unit 1, 30–40 cm	<i>Juniperus</i> sp.
41CV760	C-6*	0.2	Feature 1, Test Unit 1, 40–50 cm	<i>Ulmus</i> sp.
41CV760	C-8	0.3	Feature 1, Test Unit 3, 10–20 cm	<i>Juniperus</i> sp.
41CV1023-E	C-2	3.2	Test Unit 8, 30–40 cm	<i>Quercus</i> sp.
41CV1182-C	C-14*	10.1	Feature 1, Test Unit 4, 83 cm	<i>Quercus</i> sp.
41CV1182-C	C-16	4.8	Feature 1, Test Unit 4, 82 cm	<i>Quercus</i> sp.
41CV1415	C-2	0.1	Test Unit 3, 60–70 cm	<i>Quercus</i> sp.
41CV1415	C-5	0.3	Test Unit 3, 70–80 cm	<i>Quercus</i> sp.
41CV1415	C-23	0.5	Feature 3, Test Unit 10, 38 cm	<i>Quercus</i> sp.
41CV1415	C-25*	8.3	Feature 3, Test Unit 10, 44 cm	<i>Quercus</i> sp.
41CV1415	C-27	1.0	Feature 3, Test Unit 1, 40 cm	<i>Quercus</i> sp.
41CV1557	C-9*	1.4	Feature 5, Test Unit 2, 163 cm	indeterminate

*Charcoal samples submitted for radiocarbon dating.

been meager, despite the abundance of oak trees in the region. The few acorn fragments included in the mass of oak wood charcoal may have been in the fuel load or may have been introduced separately as refuse from acorn processing.

41CV760

Wood of elm, juniper, cf. plum, and legume family (similar to acacia or honey locust) were identified in four flotation and three macroplant samples retrieved from Feature 1.

41CV769

Nine flotation samples collected from feature and general level contexts lacked any carbonized seeds, nut fragments, or woody material large enough to identify adequately.

41CV1023-E

Flotation samples collected from Features 7 and 8 contained oak wood, and Feature 8 also produced three pecan shell fragments. One charcoal sample from a general level context was comprised of oak wood.

41CV1182-C

Oak wood dominated one flotation and two macroplant samples from Feature 1, and walnut and willow family wood also were present.

41CV1415

A considerable flotation effort was expended at 41CV1415, where 306 liters of cultural sediment were processed and analyzed. Twenty-eight flotation samples from eight features and other contexts were examined, and only three contained no identifiable charred plant remains. Wood charcoal, though abundant, was tiny, and the 224 fragments weighed only 9.1 grams. The condition of the material made identification difficult in some instances, and indeterminate wood fragments were noted in two samples. Only wood of hickory, oak, and the rose and willow families were identified, with oak the most common taxon. In addition, five macroplant samples were all composed of oak wood.

Feature 3 was the most intensely sampled and charcoal-rich area of the site. Six samples were examined, resulting in the discovery of bulb fragments that were too small to secure a positive identification. The rest of the material from Feature 3 consisted of 103 wood fragments (5.5 g), accounting for 59.8 percent of the total charcoal weight from the site. The combined evidence—relatively high charcoal density and the presence of bulb fragments—suggests that Feature 3 functioned as an earth oven.

More edible plant remains, all recovered from nonfeature contexts, consisted of carbonized grape, mulberry, and plum seeds. These remains could represent plants that grew at abandoned habitation sites and were burned by natural processes or introduced into cultural zones through some type of bioturbation. Their

contextual association with well-defined cultural zones indicates, however, that they probably represent human food remains.

41CV1554

The single flotation sample recovered from a feature did not contain carbonized plant remains.

41CV1557

Five flotation samples were collected from four features. Despite the large volume (96.26 l) of sediment, none of the samples contained carbonized plant remains large enough for identification. Feature 5, from which 62 liters of cultural sediment were floated, produced a few charcoal flecks less than 0.5 mm in size. An indeterminate wood fragment made up one macroplant sample.

DISCUSSION

Bulbs

The bulb fragments from 41BL788-A and from 41CV1415 add to a growing list of archeological sites from which geophytes have been recovered. We now have a record of at least five different bulb taxa identified from several archeological sites in greater central Texas (Mehalchick et al. 2002:Table 8.15). The plants that have been found in archeological features are eastern camas, wild onion, false garlic, dog's tooth violet, and rain lily. Plant bulbs have been recovered from well-described burned rock features such as those at Hinds Cave (41VV456), Wilson Leonard (41WM235), Jonas Terrace (41ME29), Blockhouse Creek (41WM632), Honey Creek site (41MS32), Horn Shelter (41BQ4), Rice's Crossing (41WM815), and Firebreak (41CV595) (Bowden 1999; Dering, 1996; 1998, 1999, 2000a, 2000b, 2003; Mehalchick et al 2002:Chapter 8). This is a significant body of new data on prehistoric plant use, especially considering how little we understood about the botany of burned rock middens and earth ovens a decade ago.

In fact, the idea that root foods contributed significantly to the ancient diet over much of Texas is relatively new. A list of botanical remains compiled in 1988 for a symposium on

burned rock midden archeology included only seeds (Howard 1991:65). Although bulb fragments had been noted in dry deposits of rockshelters from the Lower Pecos region for 25 years (Irving 1966) and a cache of charred bulbs had been recovered from Horn Shelter in the 1970s (Watt 1978), analysts overlooked them in flotation samples from open sites until the early 1990s. The eventual recognition of bulbs in flotation samples from open sites is attributable to two factors. Not until the 1990s did recovery and flotation analysis of cultural sediments become routine in Texas and emphasized as an important technique for investigating burned rock features. More significantly, important advances were made in the techniques for identifying charred remains of certain types of roots, primarily bulbs. Discovery of several complete, charred bulbs that were point-collected from the Wilson-Leonard site aided identification. Most of the bulbs were intact, allowing identification of at least the general plant structure. At the normal magnifications under which macrobotanical work is conducted (8 to 75X), it is difficult to tell what part of the plant small bulb fragments constitute. Consequently, small bulb fragments in archeological samples were overlooked for many years.

Adding to the difficulty of identification is the fact that recovery of plant food remains from burned rock features is often very inconsistent even when flotation sampling is intensive. Flotation recovery from two sites in Williamson County illustrate this point. Analysis of 460 macroplant samples and 76 flotation samples from the Wilson-Leonard site (41WM235) yielded very little information about plant food resources. Only three of the 76 flotation samples contained identifiable charred plant remains. Despite the dismal recovery, nine complete charred bulbs were point-collected from one single feature dating around 8,000 B.P. (Guy 1998:1150–1153). Of the 120 flotation samples from Late Archaic and Late Prehistoric burned rock midden sites along Blockhouse Creek, 62 produced no identifiable charred plant remains. Other samples were more productive, however, and charred plant bulb fragments were identified in five of the samples (Bowden 1999:67–71; Dering 2000a)

It was not until after complete, charred bulbs were found in burned rock features at the Wilson-Leonard site that there was a

breakthrough in recognition. Recognizing that the Wilson-Leonard plant specimens were bulbs was informative, but it failed to provide us with clues about the specific identity of the plants. No keys or reference collections existed for identifying charred plant bulbs. As a result, experimentation with modern plants led to development of an analytical technique for precise identifications of charred bulb remains (Dering 2000a). Because the method involves microscopic examination of small fragments of the bulb scale surface, it is now possible to recognize and identify small fragments of bulbs that previously were overlooked. This is a significant advance because small charred bulb fragments occur much more commonly than do complete or nearly complete bulbs. These new macrobotanical identification capabilities have, in turn, contributed to progress in the study and understanding of burned rock features and middens that are so common in hunter-gatherer sites over much of Texas.

In the most comprehensive study of earth oven cooking on the Edwards Plateau to date, Black et al. (1997:294) asserted that burned rock middens represent accumulations resulting from a rather diverse set of human activities, with earth oven cooking being the major contributor. Ovens were used primarily for cooking either the vegetative, food-storing stems of sotol or yucca, prickly pear, bulb- or tuber-bearing plants such as onion, or certain green fruits such as prickly pear tunas, or perhaps even acorns. Before that theory, various researchers argued that burned rock middens represented the remains of some unknown plant “veggie baking” (Prewitt 1976) or nut processing such as acorn-processing sites (Creel 1986).

The Wilson-Leonard site also demonstrates the time depth for use of geophytic resources and earth oven processing. Eleven bulbs were found in situ and point-collected from the matrix of three burned rock features, and AMS radiocarbon assays were secured directly on these bulbs. Burned Rock Midden 2, a Late Archaic feature, contained a bulb that was dated to 3780 ± 70 B.P., and Feature 8 is an Early Archaic feature that contained a bulb dated to 8250 ± 80 B.P. Feature 181, also an Early Archaic feature, yielded nine bulbs. All were radiocarbon dated, and the nine resulting dates average 7997 B.P. (Stafford 1998:1,054). These dates forced archeologists to consider the possi-

bility that geophyte remains could be recovered from burned rock features dating to any period within the Holocene.

Although previous archeological studies of burned rock features often took few sediment samples and seldom used flotation processing to recover macrobotanical remains, more intensive flotation sampling is becoming the norm. In a recent archeological study of burned rock middens in Brown County, which is situated at the junction between central Texas and the Rolling Plains, intensive flotation sampling yielded surprising results. Samples from burned rock midden contexts at eight sites produced hundreds of bulbs and bulb fragments of three different species—eastern camas, wild onion, and dog’s tooth violet (Dering 2002b). These finds also help demonstrate the utility of intensive flotation sampling and analysis of recovered remains from prehistoric features.

Precise bulb identification and increased flotation efforts have proven fruitful in the past decade. It is no longer unusual to find bulbs in sites across the Edwards Plateau and into the Blackland Prairies. The pattern suggests intensive cooking of various bulbs, primarily wild onion and eastern camas (but also including rain lily, false garlic, and dog’s tooth violet) in earth ovens across much of the central portion of Texas. Recovery of dozens of bulbs and bulb fragments from some 20 archeological sites (Mehalchick et al. 2002:Table 8.15) provides very strong evidence that the primary focus of earth oven use was processing geophytes. It also provides us with a significant body of data for evaluating prehistoric land-use practices in the region. Collectively the data indicate that geophytes were much more important to the foraging peoples during the Archaic and Late Prehistoric periods than previously thought.

Nuts and Acorns

Although forest mast likely made an important seasonal contribution to the diet of some groups living in the study region, no direct evidence for this use has been recovered. Oak acorn and pecan shell fragments were noted at 41CV93-B and 41CV1023-E, respectively. Both of these resources may have been important to the foragers of central Texas, but neither has usually been recovered in quantities from open archeological sites in the region.

Hall (2000) has argued for the importance of pecan in prehistoric land use throughout central Texas, but the argument is not backed by physical evidence from sites. Some pecan fragments have been recovered from 41WM238 (Crane 1982) and sites in Caddo Country (Dering 1992:116). By contrast, thick layers of pecan shell were noted in the well-preserved deposits of Baker Cave on the southwestern edge of the Edwards Plateau (Chadderdon 1983:80). The presence of dense concentrations of pecan shell suggests that the lack of pecan from open sites may be because of their formation processes.

Similarly, acorn fragments are not typically recovered in large quantities from sites in central Texas. One exception occurred at a site on Fort Hood where a burned rock mound at 41CV686-A produced a high number of acorn fragments, which may be the residue of processing (Dering 2001:Appendix E). A few fragments have been recovered from many sites in northeast Texas, but the material was not encountered in quantity from burned rock midden sites. Crane (1982), however, identified acorn frag-

ments from 41WM53, 41WM56, 41WM57 and 41WM73. Dering identified acorn fragments from 41MS32 (Dering 1997:581). It is clear that groups were using forest mast resources, but their role in land use strategies has not been defined.

CONCLUSIONS

Archeobotanical analysis of samples from nine sites has shown that some of the sites have the potential to contribute information about prehistoric land use and plant foraging strategies. Sites that contain recoverable botanical information are 41BL788-A, 41CV93-B, 41CV760, 41CV1023-E, 41CV1182-C, and 41CV1415. Flotation samples from sites 41CV769, 41CV1554, and 41CV1557 yielded no charred materials and probably have a very low potential to yield interpretable plant remains. The presence of bulb fragments, acorn fragments, and pecan nutshell fragments suggests that further work may allow analysts to begin to determine the importance of forest mast and geophytes to the inhabitants of the Edwards Plateau.

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